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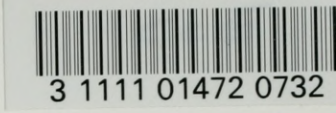

Wings at War Series, No. 5

Air-Ground Teamwork on the Western Front

DATE DUE

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Wings at War

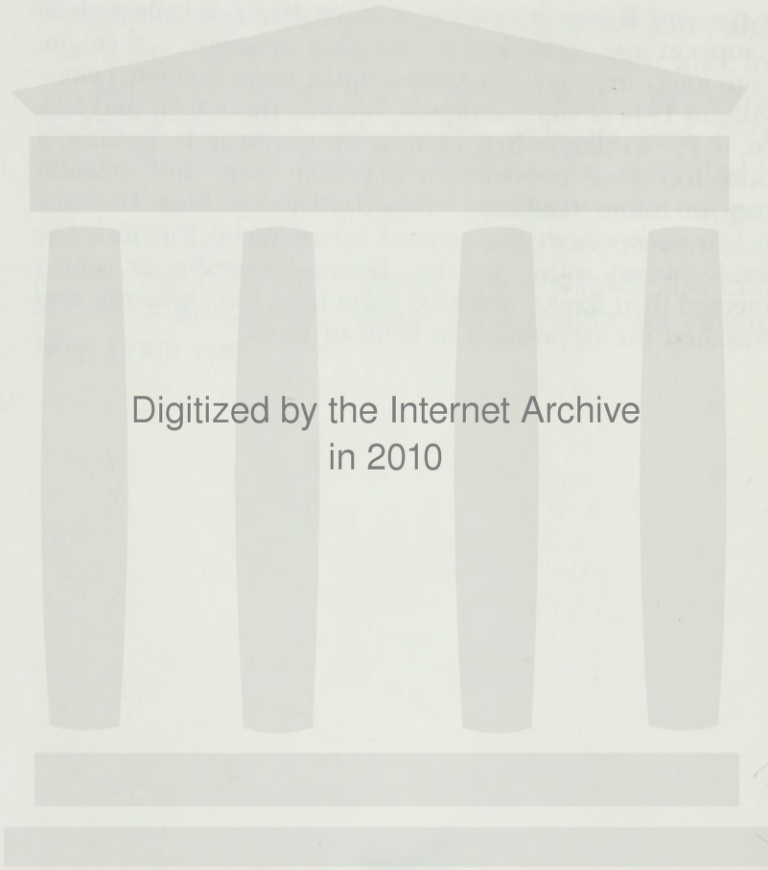
COMMEMORATIVE EDITION

Originally published shortly after key air campaigns, the Wings at War series captures the spirit and tone of America's World War II experience. Eyewitness accounts of Army Air Forces' aviators and details from the official histories enliven the story behind each of six important AAF operations. In cooperation with the Office of the Secretary of Defense, the Center for Air Force History has reprinted the entire series to honor the airmen who fought so valiantly fifty years ago.

Center for
Air Force
History
Washington, D.C.

Foreword

Air-Ground Teamwork on the Western Front describes close air support and battlefield interdiction in action. A single, month-long campaign—the famous thrust across northern France in August 1944 of Gen. George S. Patton's Third Army and Maj. Gen. 0. P. Weyland's XIX Tactical Air Command—became a model for close cooperation between army and aviation forces in future conflicts. This day-by-day, blow-by-blow account shows how the ground forces raced forward, frequently twenty miles per day, because friendly air power protected their flanks, shielded them from the *Luftwaffe*, and devastated the opposition in front of them.



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Official Photo USAAF.

Maj. Gen. O. P. Weyland, Commanding General XIX Tactical Air Command.

Air-Ground Teamwork on the Western Front

WHEN the history of this war is written, one of the significant developments to be noted and discussed will be the formation and rapid growth of the air-ground tactical team. Born of resourcefulness and necessity, cradled in the African desert, the lusty infant quickly grew into a creature of bone and sinew until, when Normandy was invaded, it had become a smoothly functioning striking force of terrific power, destined to change many tactical theories theretofore accepted as axioms. This booklet focuses its attention upon one phase of air-ground cooperation, the drive across France of Maj. Gen. O. P. Weyland's XIX Tactical Air Command (XIX TAC) and Gen. George S. Patton's Third Army.

For 30 days this new battle team moved ahead without pause—eastward, southward, and westward. Six days after it went into operation, all Brittany had been conquered except for three beleaguered ports; 9 days later, one jaw of the Falaise-Argentan trap had been clamped shut; in another week the Seine was crossed above and below Paris; and by the end of the first month this air-ground combination was fighting within 60 miles of Germany.

In the course of these incredibly rapid operations XIX TAC was called upon to carry out many assignments that no air arm had ever done before. To keep up with the advance of Third Army's forward command post, frequently 20 miles a day, XIX TAC had to move its combat headquarters five times during the 31 days of August. It was an air force that never could settle down, that always must keep trucks and vans ready to roll closer to the front, that never could permit a time lag in its operational planning and coordination.

In August, Thunderbolts and Mustangs of XIX TAC flew on five different fronts, none of which was stable. The fighters probed and disorganized with their bombs deep areas of enemy concentrations and shallow zones directly ahead of Third Army tanks; they protected the Third Army's rearward supply roads, at one

time very narrow and precarious, from ground attack and sabotage aircraft; they flew almost daily against suicide garrisons which the Germans left behind in encircled, sternly defended harbor cities; and finally, in a completely unorthodox move, they were given full responsibility for the protection of General Patton's long, vulnerable right flank along the Loire.

This diversity of assignment meant that the aircraft of XIX TAC had to operate simultaneously along an irregular, shifting 500-mile front ranging from Brest almost to the Rhine. Dozens of high-priority missions were required on every good flying day to meet threats along the whole uneven battle line, to keep the Germans in every sector immobile and off balance, and to prevent any massing of enemy strength to oppose the Third Army.

Background of the XIX Tactical Air Command

By 1 August most elements of General Weyland's command had fought the enemy for at least 5 months, and some had been in combat since December. XIX TAC joined the Third Army with a backlog of combat experience in all three of its tactical assignments: neutralization of enemy air power; interdiction of enemy movement on roads, rails, and rivers to and from the battle zone; and close cooperation with ground forces.

General Weyland took command of XIX TAC, then one of the two components of IX Fighter Command, on 4 February 1944. His first headquarters was at Aldermaston Court, near Reading in Berkshire, from where he directed the administration and helped to plot the operations of Thunderbolts and Mustangs flying from East Anglian bases with Eighth Air Force Fortresses and Liberators. Soon after its activation XIX TAC consisted of two fighter wings, the 100th and 303d, embracing five groups of Thunderbolts and two of Mustangs.

Gradually the aircraft of IX Fighter Command shifted from long-distance escort missions, protecting the heavies against the Luftwaffe, to fighter-bomber operations against all types of enemy defensive and logistic targets in northern France, the Lowlands, and within the borders of the Reich. As invasion drew close, General Weyland's seven groups moved to advanced landing strips in Kent, a few minutes' flying time from the enemy, the better to

carry out their part in the softening of the German garrison armies in France.

In the weeks of furious air warfare before D-day, XIX TAC's operations were coordinated with those of its sister organization, IX Tactical Air Command, under Maj. Gen. Elwood R. Quesada. XIX TAC participated in the preinvasion rail- and road-smashing campaigns and helped to destroy bridges across the Seine, the Meuse, and the Oise to divide from each other all possible invasion sectors and to make transportation from the big German weapons and matériel factories to the Westwall difficult and perilous. To take one obvious example, the destruction of all bridges across the Seine from Paris to the sea separated the German Seventh Army in Brittany and Normandy from the enemy Fifteenth Army in the Pas de Calais.

Fighter-bomber pilots, learning their trade the hard way during April and May, returned to base each day with new techniques for sealing tunnels, blowing up bridges, blocking tracks, and derailing railway cars. They approached their targets from a dozen different angles, ranging from a horizontal, almost zero-degree bomb run, to the nearly perpendicular approach of straight dive bombing. Their record of enemy vehicles destroyed and rails severed ran into impressive figures.

From D-day to 1 August, when the First Army was the only American army operating in France, XIX TAC groups, based first in England, then in Normandy, were under operational control of IX TAC. General Weyland's airmen participated in all the close cooperation missions of those first 2 invasion months—the 3-, 4-, and 5-missions-a-day schedule of the assault stage; the interdiction of traffic across the Loire and through the Paris-Orléans gap; the harrying of enemy movement inside Normandy and Brittany; the concentrated 2-hour bomber and fighter-bomber attack on the pyramidal forts ringing Cherbourg; and the historic operations south of St. Lô.

On 2 July General Weyland's field headquarters were set up at Cricqueville in Normandy. A few days later he moved to Nehou, near the secret command post of the still secret Third Army. Until 1 August, while XIX TAC's Thunderbolts and Mustangs continued to fly in cooperation with the First Army, the operations and intelligence personnel of XIX TAC and Third Army made plans for their

independent air-ground campaign, to start with the activation of General Patton's forces.

Background of the Third Army

The Third Army had been in Germany before. Its shoulder patch, a white "A" and red "O" on a field of blue, proclaimed months spent in the Reich after the last war as the army of occupation. From the outset, General Patton made no secret of the fact that the Third Army would again go to Germany.

He had taken command of the army in England on 26 March 1944. Until 6 July he directed a rigorous training program, emphasizing the physical fitness of his men, aircraft recognition, firing of individual and combined weapons, and familiarity with mines, minefields, and booby traps.

On 6 July General Patton established headquarters at Nehou in Normandy. Under his command were four corps, the VIII, XII, XV, and XX. When the Third Army became operational on 1 August it had three immediate objectives: to drive south and southwest from Avranches, to secure the area around Rennes and Fougères, and then to wheel westward to capture the peninsula of Brittany and open the Breton ports.

First Phase of the Operation

The front on 1 August.—On 1 August American armor and infantry were smashing forward on the impetus of the break-through at St. Lô. The surge of five armored columns cut the Germans to ribbons. Dozens of powerless, unequipped, and disorganized enemy units were scrambling southward and eastward to escape annihilation. Fighters of the XIX and IX TAC hunted the foe on the roads, where they moved two and three trucks abreast without discipline in planless escape; in the undergrowth in valleys and stream beds, where Panther and Tiger tanks and isolated artillery sought refuge; in bivouac areas, where Germans pitched their oblong tents for a few hours' respite in their headlong flight.

This sudden rout followed the massive air operation of 25 July, which helped to break the month-old deadlock along the base of the Cotentin peninsula. From the capture of Cherbourg until

that date, Americans and Germans had fought obdurately around St. Lô, Périers, and Lessay. When the shattering aerial attack finally came, the massed weight of American heavy, medium, light, and fighter-bombers, about 3,000 strong, saturated German antiarmor defenses with thousands of small bombs, each with a lethal radius of 100 yards. After that the enemy lines were numbed, dislocated, shredded. The First Army sprang forward before the Germans could recover their balance. In a week the Army reached Avranches. Its cooperating air power stopped hundreds of tanks and vehicles along the roads, throwing into confusion seven nervously withdrawing divisions. At Avranches, on 1 August, the Third Army entered the fight.

Five days—for Brittany.—General Patton's first request to XIX TAC was a strange one: *Do not blow up any bridges.*

Since long before D-day tactical aircraft had concentrated on bridge-busting, a very effective way of slowing German movement. General Patton looked at it another way. He wanted the bridges intact so that his own troops could cross the rivers without delay, without having to ford them, or to throw up ponton bridges. He counted on swift advance—and made it. Within 5 days all Brittany except Brest, St. Malo, Ile de Cézembre, and Lorient were in American hands.

The very speed of Third Army movement changed the whole character of fighter-bomber cooperation. Before the break-through, the highest priority assignment for Thunderbolts, Mustangs, and Lightnings had been the isolation of the battlefield from the south, east, and north. That assignment presupposed that advance would be slow and tortuous, that it was advantageous to demolish permanent road and river structures like bridges, embankments, and overpasses to stop the enemy from flooding the battle zone with troops and supplies. When General Patton started moving, he turned the interdiction job inside out. The Third Army wanted fighter-bombers to prevent movement from, not to, the battle area. It wanted the German escape roads blocked, but it also wanted lines of communication ahead of our troops as smooth and fluid as possible.

Before the big air blow of 25 July, the second highest priority

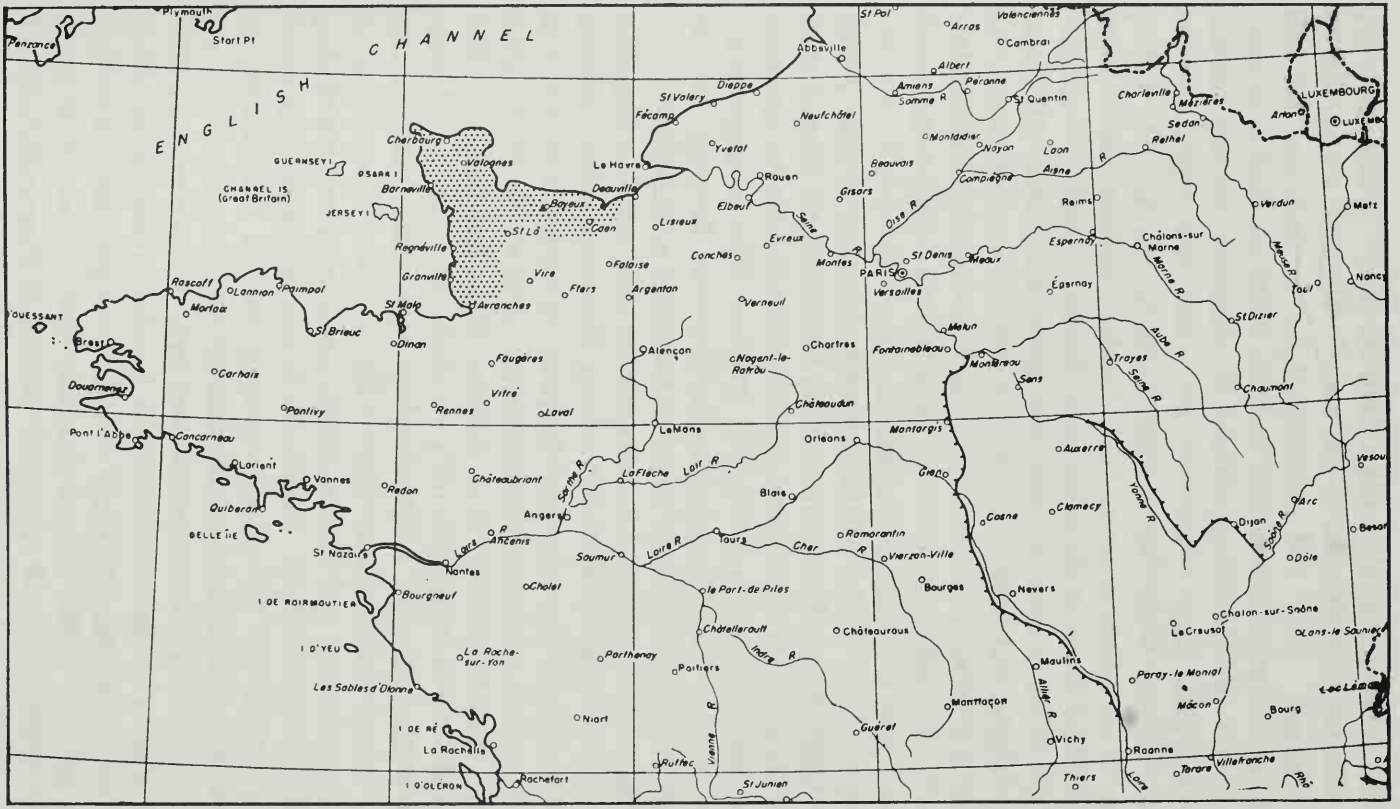
assignment for air, as the First Army fought stubbornly from hill to hill and patiently stormed strong points, had been to attack enemy defensive positions which had held out for days and might continue for weeks. Thunderbolts would plan, 24 to 48 hours in advance, to dive-bomb a stubborn machine gun position or a fort impregnable from the ground.

In XIX TAC-Third Army tactics, the second job also was reversed. There were no such things as German "strong points" in Brittany short of the great island and port fortresses. Over the open country of the peninsula the Germans rarely paused long enough to make a stand on Hill X or Ridge Y. It became impossible to plan tactical air cooperation missions a day in advance when Third Army tanks rolled ahead 20 miles a day and when aircraft had to make sure, before an attack, that the objective had not already been taken by our ground forces. It soon became clear that in cooperating with General Patton, XIX TAC would find its targets in the field, would plan as it flew.

To cut off enemy lines of retreat, to destroy German tanks and infantry in flight, to eliminate pockets of resistance and delaying action, General Weyland planned and dispatched two extremely flexible types of missions which depended heavily upon the acuteness and resourcefulness of his individual airmen.

One was *armed reconnaissance.* In these operations, fighter-bombers armed with bombs and bullets ransack deep and shallow zones ahead of the ground forces for targets of opportunity. The field for armed reconnaissance is bounded on the inside by the bomb line, a series of marked terrain features, beyond which all territory is definitely held by the enemy. With General Patton's amazingly swift ground advance, the bomb line moved hour by hour and pilots carried area maps strapped to their legs so that they could be alerted about changes as they were made. In the campaign for Brittany and after, XIX TAC armed reconnaissance missions paid juicy dividends in locating and breaking up masses of enemy strength behind the battle line, in knocking out enemy tanks and vehicles approaching or fleeing the front, and in giving the Germans no leisure to rest, regroup, or maintain secrecy of movement.

The second type of mission was *armored-column cooperation.*



Ground Situation, 1 August 1944

Before the St. Lô break-through, between 10 and 14 tanks in every division were equipped with the same VHF radio sets carried by the fighters. Four- and eight-ship flights hovered over the lead elements of armored columns, ready to attack on request, to warn the tanks of hidden opposition, to eliminate delaying actions. These flights never returned to base until new flights came to relieve them. With this airplane cover always present, and as close by as fighters escorting heavy bombers, obstacles which might have taken hours to surmount were eliminated in a few minutes. Before St. Lô, a most important precaution was taken. All American vehicles had fresh white stars painted on them, and were given cerise and yellow panels to identify them to friendly aircraft. In a war which saw American and hostile tanks deep within each other's lines, these measures saved many lives.

On 1 August XIX TAC had operational control of three groups of Thunderbolts. As General Patton's tanks plunged forward south of Avranches, the first air operations order assigned two groups to cover the progress of two armored divisions. The third group was ordered to fly armed reconnaissance deep into Brittany, over the broad fields where Third Army tanks would soon strike.

The P–47's could not take off until late afternoon, but they flew 10 separate missions in the few hours remaining before darkness. The first day's bag was miscellaneous. Spotting the muzzles of AAA guns in some harmless-looking hay wagons, the Thunderbolt pilots blasted them to bits. Another flight knocked out three 88-millimeter fieldpieces in the path of the 6th Armored Division, and a third plastered a field bristling with enemy gun positions. The armed reconnaissance aircraft cut 3 railway lines, destroyed 22 motor vehicles and 2 armored cars, and raked a busy marshalling yard and a fuel dump. Statistically, it was an inauspicious beginning for the new air cooperation arm, but that was because the planes were grounded throughout most of the day.

In the next 4 days General Patton's armored columns penetrated and secured all Brittany except the heavily fortified ports. Intermittent bad weather kept many aircraft on the ground, but XIX TAC was growing to full strength and daily flew missions which materially helped the Army's progress. Two more P–47 groups and one P–51 group joined General Weyland's forces before 5 August, and

after only 3 days at its camp site XIX TAC headquarters again moved nearer the battle line, this time to Beauchamps, east of Granville.

General Patton's tactics developed explosively and intricately. General Weyland had to spread his flying strength thinly, cover new and vast areas every day, make maximum use of every fighter-bomber. Broadly, the air-ground warfare in the first days of August broke into three phases.

First, three Third Army columns were cutting into Brittany along parallel lines. All required constant armored-column cover during good flying hours. The spearheads in southern and central Brittany occasionally ran into dangerous tank concentrations or the cross fire of heavy guns, often met masses of enemy troops in bivouac areas or defensive deployments. The northernmost Third Army column, Brig. Gen. Herbert L. Ernest's armored task force, soon reached the concrete pillboxes ringing St. Malo and had to face fire both from powerful ground batteries and from warships in St. Malo Harbor.

Simultaneously, XV and later XX Corps fought southeastward from Fougères, in a move which started as protection for the rear of the Brittany-bound columns and which quickly matured into an independent drive. There were reports that these swiftly moving corps might be menaced by panzer units south of the Loire; therefore General Weyland's fighters and tactical reconnaissance planes had to maintain far-flung, vigilant patrols around the flanks.

Finally, on 3 August, the enemy inaugurated serious and potentially dangerous countermeasures. He struggled to concentrate his divided forces around Rennes and St. Malo, and, more ominously, he was massing strength at Mortain for an eleventh-hour drive to cut the narrow American supply corridor at Avranches. This threat gave General Weyland the difficult job of protecting Third Army's rearward lines of communication against breaches by enemy ground forces and desperate attacks by small units of the Luftwaffe.

The three subphases of these operations are considered singly:

Armored-column cover and armed reconnaissance in Brittany.— General Patton's armored columns in Brittany were traveling so fast that frequently they outran their communications. For the Thunderbolts overhead, the bomb line was hourly shifting westward, where the end of the peninsula juts into the Atlantic. The

front was so unstable that attacks were never planned in advance; the P–47's eliminated any opposition as they found it.

Naturally the targets were scattered and miscellaneous. In the first 5 days of August, XIX TAC fighters bombed and strafed 21 German troop concentrations or bivouac areas and 1 command headquarters, destroyed 250 motor vehicles, 12 tanks, 9 horse-drawn vehicles, 4 locomotives, and 9 railway cars. The rail network in Brittany was not nearly so dense as that in Normandy, but Mustangs and Thunderbolts cut tracks in 5 places and disorganized 7 enemy fuel and supply dumps and 1 gasoline storage tank.

Although German defenses in Brittany were thin and widely separated, the aircraft of XIX TAC put 17 gun posts out of action, several at the direct request of ground forces temporarily thwarted by the enemy positions. One group of P–47's silenced eight guns one afternoon, and then flew on to destroy another which was marked off with white smoke by Third Army columns. Another afternoon, eight Thunderbolts precision-bombed and knocked out three self-propelled heavy guns directly on the line of advance into central Brittany.

German tanks in Brittany tried every ruse they could invent to escape the fighter-bombers, and occasionally they put in sudden appearances in the zone of operations. On the morning of 2 August P–47's on armed reconnaissance along the northern coast of Brittany found a German armor assembly area and knocked out seven Tiger tanks which had been trying to conceal themselves under a smoke screen. Sometimes air cooperation requests from Third Army's G–3 for Air required immediate action and necessitated vectoring XIX TAC Thunderbolts to the target. One such request was for an immediate attack on a group of tanks in a wood. A P–47 squadron was promptly dispatched to the wood, and its sixteen 500-pound bombs fell in thick concentration on 15 enemy tanks.

Since Luftwaffe opposition was so slight—only one daylight attack was reported in the 5-day campaign for Brittany—armored-column cover flights were often released and given permission to sweep over stretches of road up to 30 miles ahead of our lead tanks. These sweeps, free yet tied definitely to a particular armored column,

brought in the heaviest bag of German motor and horse transport on the roads.

The toughest resistance encountered by armed reconnaissance patrols in Brittany was from the walled-in fortress at St. Malo; they were violently shelled by Germans deep inside concrete gun emplacements and on warships in the harbor. Third Army at once called for bomber assistance from Ninth Air Force; meanwhile Thunderbolts braved solid flak on 4 and 5 August to destroy or damage one combat ship each day. In other operations near St. Malo, fighter-bombers blew up buildings loaded with explosives.

Guarding the southern and eastern flanks.—On 3 August the XIX TAC operations order called for cooperation with XV Corps armor and infantry, thrusting southeast from Fougères. Originally this was a reconnaissance rather than an offensive task, although the first patrols landed with reports of transport destroyed and rails cut. The XV was making such rapid headway that armed and tactical reconnaissance units had to fly as far south as Angers and as far east as Laval on the lookout for possible opposition. Tactical reconnaissance aircraft, flying in pairs for self-protection, returned with photographs of German defenses in a wide arc around the Third Army flanks, while armed reconnaissance struck closer to the Army's forward units and attacked whatever offered itself.

Later in August this aerial guard mount on the Third Army's right would turn into one of the most spectacular air cooperation achievements in history. For the time being it was in the watch-and-wait stage. Reconnaissance planes were instructed to seek out the 11th Panzer Division, which was repeatedly reported to be northward bound to hit General Patton's right flank near Rennes. The vigilant aircraft reported every movement to intelligence but, as it worked out, the 11th Panzer Division never turned up on the Third Army front, although a few elements may have been present for a time in the vicinity of Angers.

Protecting the corridor.—From the start the Third Army was menaced in the rear. Above Avranches, the First Army held the Cotentin peninsula; below Avranches, the Third Army was expanding in all directions. These two broad areas of American penetration were tied together only by a narrow, vulnerable corridor, criss-

crossed by roads and bridges along which reinforcements were speeding southward. The enemy grouped at Mortain and attempted a powerful drive westward to Avranches and the sea, with the object of cutting the American armies in half.

From the first, General Weyland told his groups cooperating with armored columns to make periodic sweeps backward to cover the Avranches corridor against air attack. As soon as XIX TAC got its first P–51's, they were assigned to keep a constant fighter umbrella over the Third Army rear. Enemy aircraft seldom came over the corridor during the day, but sometimes lone bombers or small formations attacked roads and bridges near Avranches by night. XIX TAC was not equipped with night fighters; hence a request for protection was forwarded to IX Air Defense Command, which put up Black Widows to drive off the harassing enemy aircraft.

Second Phase

The trap begins to close, 6–12 August.—Between 6 and 12 August, the trap began to close around the German Seventh Army. Rennes fell to General Patton's forces without a struggle; all Brittany was overrun except for the ports; the Third Army began an encircling movement to strike the rear of the enemy forces facing the First Army and the British near Mortain and Vire. Within a couple of days the Third secured Laval and Mayenne and was fanning out to the east and south of Le Mans. As this 6-day period ended, the Third Army's big push to trap the Germans in the Mortain-Falaise-Argentan pocket was underway.

Weather was better in those 6 days, and XIX TAC flew more than 3,500 sorties, averaging almost 600 a day. On the clearest days, some groups flew as many as five separate missions daily, and many pilots put in a working day of almost 12 hours of continuous fighter-bombing. The air arm was being put to maximum use.

On 7 August XIX TAC grew to its greatest stature—nine groups of fighters. Later in the week it took the wraps off its secret weapon, a picked P–47 squadron which carried and fired 5-inch rockets as well as the standard load of 500 pounds of general-purpose bombs and .50-caliber machine-gun bullets.

As General Patton put more and more distance between his

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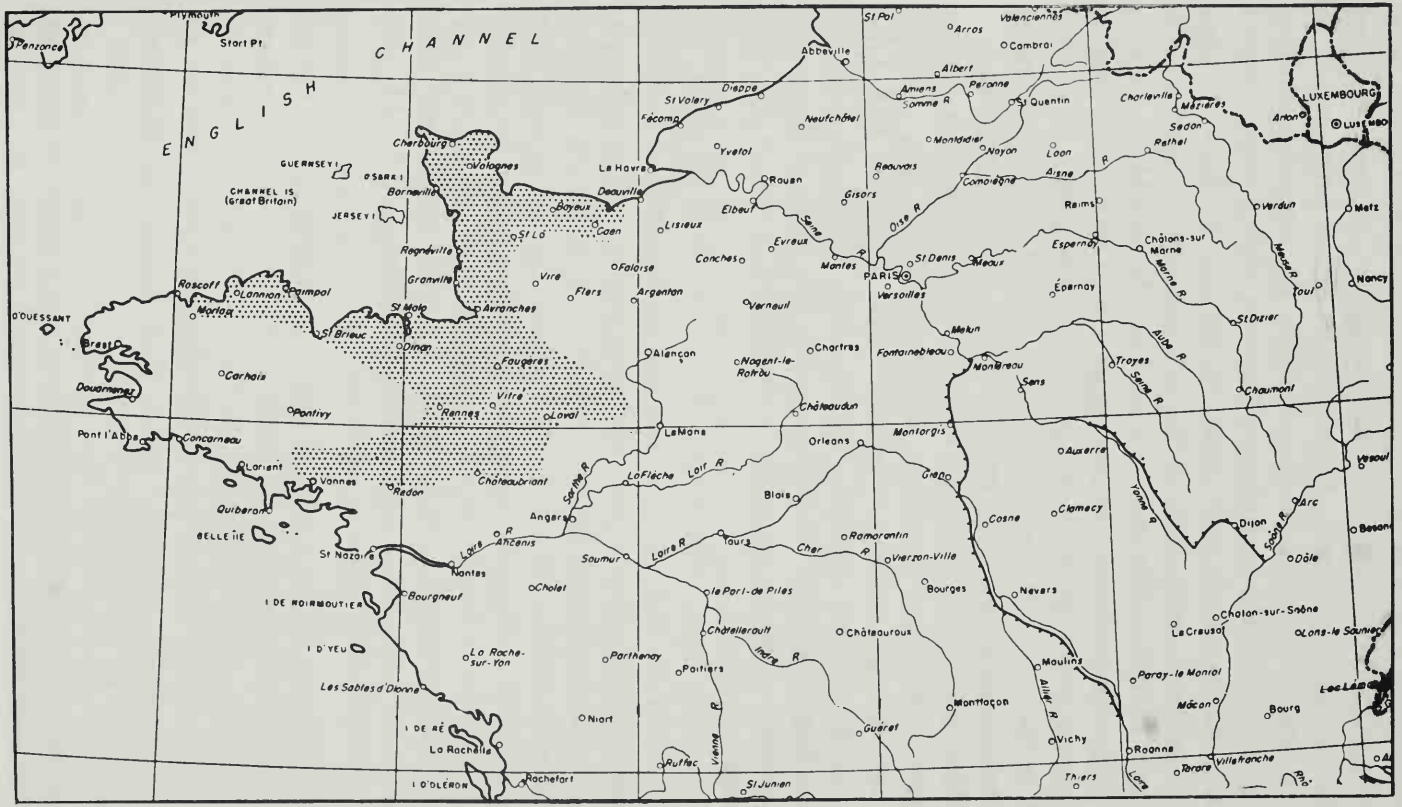


Ground Situation, 7 August 1944

army and the XIX TAC flying fields in Normandy, General Weyland's headquarters came up sharply against its most vexatious problem—communications. On 7 August, Third Army moved to a new camp site near St. James, well below the Avranches corridor. As usual, XIX TAC went along. However, while General Patton's communications were made easier by keeping headquarters close to his advance units, XIX TAC's communications question was seriously complicated by moving away from the airfields in the rear. Nightly, enemy saboteurs cut the extended lines between the combat operations tent of the command and the landing strips. XIX TAC had to leave a small operating echelon behind at Beauchamps to maintain contact with the groups and to control operations.

XIX TAC never overtook Third Army headquarters during August. The Army sometimes moved 20 miles a day. As long as there were no available airfields near the front lines XIX TAC had to stay behind and send an advanced echelon up with the Third Army. General Weyland got into the habit of flying forward every other day to confer with General Patton or his chief of staff.

The enemy made XIX TAC's job as difficult as he could, but every one of his tricks was frustrated by the ingenuity of American fighter pilots. At first the Germans tried picking up our call signs, broadcasting as General Ernest's task force or as the 4th Armored Division, in an effort to catch our aircraft in traps or to send them barging off on wild-goose chases. But the pilots spotted the enemy's clumsiness and unfamiliarity with our terms, challenged him to authenticate, and quickly distinguished true orders from bogus ones.

In the 6 days up to 11 August, fighter-bombers of XIX TAC took care of five separate major assignments:

1. Guarding General Patton's flank along the Loire
2. Neutralizing enemy air power
3. Flying armed reconnaissance
4. Giving the ground forces close cooperation
5. Continuing operations against Brest, Lorient, St. Malo, and the Ile de Cézembre

Loire flank.—Never in military history had a ground commander entrusted the defense of a flank to tactical aircraft. But early in

August General Patton had only small forces available to man his southern flank along the Loire River. On the other side of the river, G–2 told him, there were enough Germans to cause a lot of trouble if they massed and made a big crossing.

General Patton asked XIX TAC to guard that right flank for him. He said he was confident that General Weyland's aircraft could discover any danger by armed and tactical reconnaissance, and could prevent any concentration or large movement by fighter-bomber attacks. Then the Third Army drove eastward, seizing the principal cities on the north bank of the Loire and leaving only small garrisons behind to hold them.

XIX TAC shifted the main weight of its armed reconnaissance southward to the Loire. Roads, railway lines, and marshalling yards on the enemy side of the river were kept under constant surveillance. Judicious dive bombing and strafing attacks dissuaded the Germans from trying to cross the Loire in force. No real threat ever developed, and by 1 September XIX TAC could look back on a new, difficult job competently taken care of, the defense of the long, sensitive right side of General Patton's eastward-bound columns.

Enemy air defeats—prelude to destruction.—The first major flare-up of enemy air power against the Third Army and XIX TAC began on 7 August and continued sporadically for 4 days. The Luftwaffe was defeated in nearly every large and small engagement. On the fifth day no enemy aircraft appeared.

On the 7th, German aircraft suddenly became aggressive, made a last-ditch attempt to check the encirclement of von Kluge's armies south of the Seine. Early in the morning German bombers carried out a damaging attack on an American supply column southwest of Mortain. At break of day XIX TAC aircraft took off as usual, knowing they might meet the Luftwaffe. Before dusk, 33 German planes were destroyed, 14 in the air and 19 on the ground.

First blood was drawn when the XIX TAC operations room vectored 12 Thunderbolts, which were covering an armored column, to attack the rich Luftwaffe airfield at Chartres. Veering toward the field, the fighter-bombers dropped 8 economical bombs, destroy-

ing 6 German aircraft and damaging 3 others. Then Mustangs of the pioneer 354th Group shot up 12 Me–109's and 1 Ju–88 parked on a well-camouflaged GAF airdrome 6 miles to the east. Finally, other Mustangs sweeping the Mayenne area were directed to a new course to intercept 12 aggressive Me–109's. They destroyed 5 and damaged 2.

The next day, as General Patton's leading elements began to burst open the wasp's nest of airdromes between the Loire and the Seine, the Germans flew in groups of 20 to 40 aircraft, and attacked only when they had local superiority in numbers and could count on the advantage of surprise. They tried desperately to break up the widespread rail- and road-wrecking tactics of the American airmen, but by the end of the day five enemy aircraft were down and armed reconnaissance was progressing more punishingly than ever. German single-engine fighters based on the superb flying fields around Paris were now forced to fight defensively to protect their bases, and the Luftwaffe had to make extraordinary efforts to put an offensive patrol into the air.

On 9 August Thunderbolts covering the XV Corps were frequently vectored off course to meet enemy fighters. "Vectored to hostile aircraft by 79th Division," reported 12 pilots of the 362d Fighter Group. "Two Me–109's observed 1000 hours at 700 feet. One destroyed; one evaded combat. Losses: None."

Far to the east of the battle line, beyond Paris, P–51's of the 354th Group saw long rows of Ju–88's on the Reims-Champagne airfield, and flew down the muzzles of German antiaircraft guns to machine-gun the base from 6,000 feet to the "deck." They destroyed 6 German aircraft, 2 light flak guns, and a flak tower. Nearer the fighting front, scores of American planes engaged large numbers of German aircraft in combat. Results for the day: 13 enemy planes destroyed in the air, 6 on the ground.

German activity died down on 10 August, when only four enemy planes were shot down. On 11 August none appeared. Costly to the foe though they had been, those 4 days had been only a prelude to the defeat of the Luftwaffe in France.

Armed reconnaissance, 6–12 August.—The statistical story of armed reconnaissance for this period is as follows:

More than 75 locomotives
Almost 1,000 freight cars
Almost 1,000 motor transport vehicles
More than 125 horse-drawn vehicles
Seven bridges
Eight marshalling yards
Eight supply, fuel, and ammunition dumps

—destroyed by XIX TAC Thunderbolts and Mustangs on armed reconnaissance in 6 violent days.

From the beginning of this phase XIX TAC sent its armed reconnaissance planes far beyond Paris, far south of the Loire. The campaign had a focal point; in wide railroad reconnaissance sweeps north, east, and south of Paris the fighter-bombers sought to isolate the eastern battlefield, to strangle the rail lines entering Paris from every direction. Around Paris P–47's and P–51's spotted, bombed, strafed, and destroyed long, loaded troop trains, standing rows of loaded oil tankers, fuel dumps, and all types of transport.

One morning the 362d Group sent out a 40-plane armed reconnaissance sweep north and east of Paris. This patrol, one of hundreds in those 6 days, returned to its landing strip after a few hours of field-day flying with this report: four 500-pound bombs dropped on enemy guns—guns silenced; 8 fragmentation clusters, two 500's dropped on marshalling yard—40 boxcars and 1 locomotive destroyed; 8 railway cars damaged at another marshalling yard, 25 damaged at a third; 2 fragmentation clusters on a hostile airdrome; 7 miscellaneous motor transport vehicles raked and destroyed on the roads; 15 freight cars loaded with 155-millimeter German guns strafed and damaged.

That same afternoon, on its third mission of the day, this same group planted 26 bombs on 7 Tiger tanks, 16 on a marshalling yard, and, in a deck-strafing sweep, machine-gunned 2 armored cars, 2 ammunition trucks, and 1 gasoline truck.

With one group wreaking such destruction in one day it was small wonder that as the infantry and tanks advanced, they found the roads cluttered with the twisted wreckage of German trucks, half-tracks, tanks, and guns.

Close cooperation—closing the jaws.—As the trap began to form, tank hunting was good. Squadrons covering the advance of the XV Corps' armored divisions between Laval and Mayenne found plenty of enemy armor. P–47's and P–51's entered tank battles around Mortain and Vire. When the Germans swung about at Alençon to meet the Third Army's threat to their rear, American fighter-bombers and artillery found the roads and the fields full of targets to attack.

XIX TAC'c statistical record for 6–12 August:

More than 150 tanks and armored cars destroyed
More than 30 field guns or mobile flak posts wiped out
Three troop concentrations scattered
One German headquarters strafed and dispersed

Communications along the standard channel, tactical reconnaissance to ground to TAC headquarters to aircraft in the air, improved immensely, as did the simpler thick-of-battle communication between fighters and tanks beneath them. With swifter communications, fighter-bombers began to figure more and more prominently in tank battles and armored thrusts as they were going on. The tanks that entered Morlaix had an extremely helpful flight of Mustangs circling constantly overhead. The 79th Infantry Division asked for an air attack on a camouflaged house and tower; the doughboys watched five hits with 500-pounders tear the German position apart. Enemy tanks stopped the Third Army momentarily northeast of Alençon. Fifteen general-purpose bombs—and the Third Army resumed its offensive.

When fighter-bombers were not right there, the ground forces knew that they could be summoned and would arrive within the hour. The Fifth Infantry Division requested bombardment of some railway gun positions which were holding up their progress near Angers. Forty minutes later, Fighter Control and Combat Operations vectored a Thunderbolt squadron to the area and the enemy guns were shattered by two direct hits.

Reports of spur-of-the-moment tasks performed for the ground forces began to flood XIX TAC headquarters. From 8 Thunderbolts: "Targets assigned by Eggcup. Two direct hits with 500-pound bombs on small buildings. Completely destroyed." From 7 Mustangs: "Vectored by Grandchap Able to road. Destroyed 50 motor transport, damaged 80. Destroyed 25 horse-drawn vehicles. Killed 200 troops."

Along the boundary between the First and the Third Armies' zones of operations, aircraft of XIX TAC frequently were radioed emergency requests. One report read: "Fourteen bombs on mortar position. Target assigned by Murphy. Position destroyed." Murphy was the code name of a First Army combat command.

Perhaps the surest indication of the effectiveness of the fighter-bomber attacks was the unprecedented surrender of German troops to air power. One day 8 Mustangs flashed a report that they had "strafed a column of more than 100 motor transport and animal-drawn vehicles and continued until the Germans put up a white flag and our troops closed in to take them from the southwest and east."

Brest, Lorient, St. Malo, and the Ile de Cézembre.—Fighter-bombers were obviously not the planes with which to storm citadels. When General Patton's divisions were stumped around the forts of Brest, Lorient, and St. Malo, and the near-by Ile de Cézembre, requests for air cooperation were transmitted to the heavy bombers of the Eighth Air Force and the mediums of the Ninth.

Yet Thunderbolts and Mustangs did all they could. On 10 August 8 courageous P–47 pilots asked the Fourth Armored Division for permission to dive-bomb the marshalling yards at Lorient, the concrete-walled submarine base below Brest. Told to go ahead, they flew down into intense, accurate, heavy and light flak to destroy 42 railway cars and a flak battery. Every Thunderbolt returned. Meanwhile, over Brest and St. Malo, two Mustang teams on tactical reconnaissance observed all kinds of movement and sent back radio reports to XIX TAC headquarters. These flights meant that far less time was wasted in uneventful armed reconnaissance. When the tactical reconnaissance planes found important targets, armed and bombed-up Thunderbolts and Mustangs were sent to them immediately.

Third Phase

The pocket, the run-out.—The Falaise-Argentan trap eventually netted 57,000 Germans. According to an unofficial report in mid-August, "There were 2 dead Germans for every live one, and the greatest stench of all time hung over the pocket." The crucial week of 12–19 August saw the Seventh Army all but liquidated, the Fifteenth Army turned back violently when it came to help, and indi-

vidual soldiers rushing pell-mell across the Seine and back to Germany without organization, chain of command, weapons, or transport.

As the week started, General Patton's XV Corps was driving northward from Alençon and the Canadian First Army southward from Falaise. The Germans in the pocket had plenty of fight left. Behind them stretched an escape channel several miles wide, and on 13 August they made their first large-scale attempt to withdraw.

That morning 37 P–47 pilots of the 36th Group found 800 to 1,000 enemy vehicles of all types milling about in the pocket west of Argentan. They could see American and British forces racing to choke off the gap. They went to work. Within an hour the Thunderbolts had blown up or burned out between 400 and 500 enemy vehicles. The fighter-bombers kept at it until they ran out of bombs and ammunition. One pilot, with empty gun chambers and bomb shackles, dropped his belly tank on 12 trucks and left them all in flames. All told, on the 13th, XIX TAC fighter-bombers destroyed or damaged more than 1,000 road and rail vehicles, 45 tanks and armored vehicles, and 12 locomotives. Inside the pocket they reduced 10 enemy delaying-action strong points to rubble.

The pocket was shrinking. The Germans inside used all their food and gasoline, and the trains and trucks coming to resupply them were stopped miles away from their destination. An 18-year-old prisoner fainted while being interrogated; he and his company had had no food for 4 days after fighter-bombers had smashed their field kitchen. Another prisoner, a junior officer of the 363d Infantry Division, said: "You have bombed and strafed all the roads, causing complete congestion and heavy traffic jams. You have also destroyed most of our gasoline and oil dumps, so there is no future in continuing the fight."

With the entire German force in the trap beginning to think the same way, P–47's carried leaflet bombs besides their more lethal loads.

On 14 August, 300 to 400 enemy soldiers waved a white flag when Thunderbolts of the 405th Group circled them northeast of Argentan. Fighter control was given the grid coordinates so that the nearest ground troops could pick up the prisoners.

Four days after the dismal rout of the 13th, the Germans tried another mass movement out of the pocket. Figuring that low clouds offered a reasonably good safeguard against our aircraft, they began to take to the roads two and three abreast in anything that had wheels.

A short squadron of American fighter-bombers dived dangerously low through the clouds and saw the traffic jam already under attack. They sent word back to headquarters, and soon the sky was so full of British and American fighter-bombers that they had to form up in queues to make their bomb runs. The gigantic attack kept up until after nightfall. At dawn the next day the Thunderbolts of the 36th Group spotted more than 1,000 enemy vehicles headed north, bumper to bumper. Nearer Falaise, they saw 1,000 more vehicles marked off by yellow smoke. Eagerly the pilots radioed back to base, but were told not to attack because the vehicles were in the British area of responsibility. The aircraft of XIX TAC disconsolately stuck to their own operational zone, while Typhoons, Spitfires, and Mustangs of the RAF's Second Tactical Air Force annihilated or damaged almost 3,000 German vehicles.

That day a senior staff officer of the British Second Army said that the Germans' power of resistance had been shattered.

As the aircraft of XIX TAC, IX TAC, and 2d TAF were cornering, immobilizing, and destroying the Germans in the pocket, General Patton's tanks reached the banks of the Seine at Mantes Gassicourt and Vernon. The XV Corps immediately swung east along the river bank, closing a huge new trap around the enemy remnants which had escaped from Falaise. The enemy now fought to get to the Seine and across by ferry, barge, ponton bridge, and even by swimming, the while XIX and IX TAC's sent implacable patrols over the river to catch the Germans in flight.

Fourth Phase

The Luftwaffe goes home.—Outnumbered, outfought, outmaneuvered, the Luftwaffe did what it could to frustrate Thunderbolts and Mustangs, but that was not enough. Pretending to be an officer of the 79th Infantry Division, one English-speaking German tried to vector some P–47's away from their targets. One Thunderbolt pilot, detecting something faintly guttural about the voice and desiring to check, asked him to sing "Mairzy Doats." That stopped the impostor cold.

Meanwhile XIX TAC aircraft were decisively beating the Luftwaffe in the air and on the ground. On 14 August the Germans flew fewer

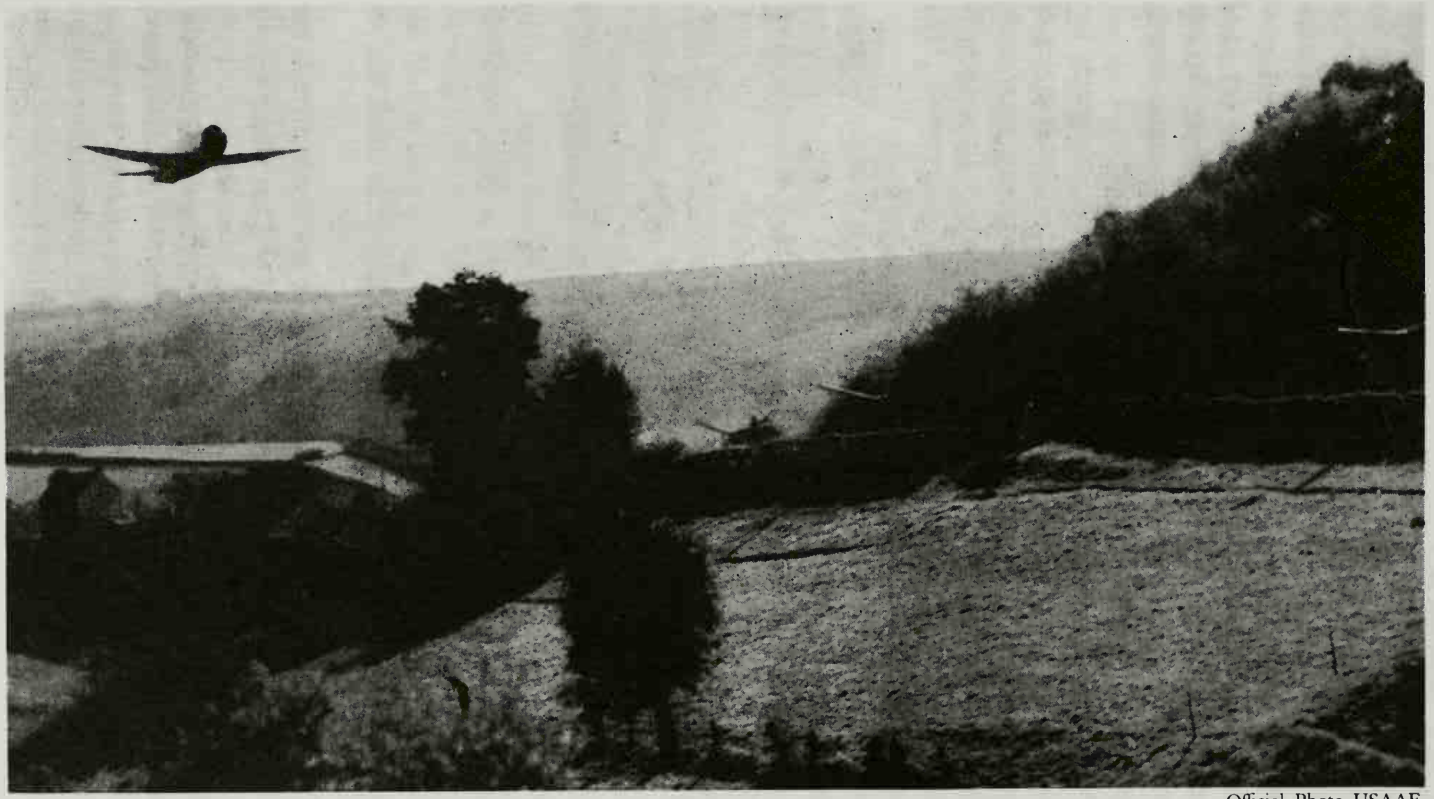
than 100 single-engine fighter sorties, presumably because they were trying to evacuate the battered airfields around Paris. The next day they came back in patrols of 20 to 80 aircraft, piloted by aggressive but inadequately trained young men who could not even take proper evasive action. Even though our bases were all but closed in by low clouds, and even though Germans in some engagements outnumbered Mustangs by 10 to 1, the Luftwaffe took its customary lacing. Fifteen German planes were destroyed on the 15th and 13 more on the 16th.

So rapidly did the Germans evacuate some airfields that they had no time for demolition. On 17 August repairs were expedited at the big military and civilian airfield at Châteaudun, and 10 days later XIX TAC moved in and used it as a permanent base for a reconnaissance group and a refueling and rearming station for fighter-bombers.

By this time, with Allied air superiority everywhere obvious to the enemy front-line soldier, the GAF had to make a drastic and far-fetched justification to keep the German infantry and armor from grumbling. A document captured at Angers, issued by the military governor of France for dissemination to troops, said, "The ground soldier in action on the invasion front feels himself depressed most of all by enemy air superiority. In spite of the numerical inferiority of our air force, there have been successes accomplished, however, which the single soldier, tied down to his narrow section of the front, cannot appreciate."

About the time this apologetic proclamation was issued, Mustangs and Thunderbolts were running into sharp combat every day. The veteran 354th Group, which had been worsting the Luftwaffe steadily over Germany and France since December 1943, always took a prominent part in air battles ranging from the front to miles behind it. The Germans tried everything—even fake dogfights, aerial equivalent of the football Statue of Liberty play. On one occasion two FW–190's with no markings and three ME–109's with faked United States markings chased each other around the sky, then all dived and strafed an American armored column.

On 25 August the GAF fighter force in France was broken. In combat over France and Germany, in strafing attacks on Luftwaffe airfields, fighter-bombers of the Eighth and Ninth Air Forces destroyed 178 German aircraft, probably destroyed 13 others, and damaged 63, making a total of 254 enemy planes permanently or temporarily put out



Official Photo USAAF.

By radio a P–47 gives information on enemy tank columns to American armor during the fighting of August 1944.

of action. XIX TAC claimed more than one-quarter of the day's victories: 36–1–8 in the air, 18 destroyed and 4 probably destroyed on the ground. All the victories in the air were won by the 354th, which was active all day long in a series of single-squadron fighter sweeps against enemy airfields north and northeast of Paris. The Mustang pilots were always outnumbered, yet nearly always won. Late in the day 12 of them slashed into 45 FW's and ME's and destroyed 13 enemy fighters for a loss of 4. Another squadron blew up 13 single-engine enemy fighters on the ground at fields near Beauvais and Reims.

At dusk on 25 August Thunderbolts and Mustangs saw enemy aircraft with belly gasoline tanks moving eastward, as their complex of bases around Paris fell into the hands of Third Army spearheads. Within a few days the Luftwaffe was driven farther east as General Patton's advances made GAF bases along the Marne untenable. The remaining German fighter force in eastern France was compelled everywhere to decamp and to start operating from bases behind the Siegfried Line. As August ended, XIX TAC had to seek enemy aircraft on the ground, since they rarely took to the air. On 28 August fighter-bombers first destroyed 11 German aircraft by bombing and strafing a field near Neufchâteau, then sighted a train carrying 13 Ju–88 fuselages and shot up every one of them.

Fifth Phase

The end in France.—The end, when it came, was rapid. On 19 August fighter pilots reported fires and explosions in Paris, and above and below the city Third Army advance elements were striking out in a bold encircling move. South of Paris, the Germans tried to hold out in positions on high ground, but they were unable to check the relentless advance of the Patton eastward-bound columns.

The next day pilots on armed reconnaissance saw the highways, the railway lines, and the marshalling yards behind Paris clogged with trucks, trains, and animal-drawn vehicles, all hurrying toward the Reich. West of Paris, disorganized units were trying to get across the Seine any way they could. Aircraft of XIX TAC dropped delay-fuzed bombs, set for detonation during the night, on south bank ferry slips. They exploded at the peak of the Seine crossings, in the night's darkest hours. Within Paris, the Germans announced that rioting had broken

out and in a desperate order of the day they threatened to shoot any person participating in the disturbances.

The situation was extremely fluid. North of the capital, Thunderbolts gave armor and infantry the usual close cooperation against the few targets remaining. They demolished tanks, barges carrying tanks across the Seine, and isolated German machine-gun nests which sought to cover the river crossings. On 23 August, with Army spearheads more than 60 miles east of Paris, the French Second Armored Division and the First Army's Fourth Infantry Division rode into the capital to complete the official occupation.

In the east, new hunting grounds developed for the fighter-bombers, nearer and nearer the Siegfried Line. Firing rockets, dropping bombs, shooting machine guns, XIX TAC aircraft smashed cars in ammunition convoys, 105-millimeter big guns guarding the German retreat, still more motor vehicles, and every day, as enemy fuel and vehicle shortages decreased motor transport, more and more animal-drawn carts and weapons. Combat operations planned a short-range project in the Melun-Provins area, designed to cut off the still-open escape routes of Germans trapped south of the Loire. Everywhere they cut rails and blew up trains—and in the south, as in the north, the enemy retreated with heavy losses and in great confusion.

Far to the west, General Weyland's aircraft helped the determined VIII Corps to smoke out the obstinate defenders of Brest. In 2 slashing days the fighter-bombers destroyed or damaged 14 enemy naval and merchant vessels in the Brest harbor, knocked out eight gun positions, and saturated a defended area that had been marked by the white smoke of fire bombs. Brest doggedly continued to hold out, but the fortress was to fall in September.

Toward the end of the month General Patton's army had crossed the Marne on a 90-mile front and was rolling toward the Aisne. Château-Thierry and other battlefields in the Marne-Aisne region, which had taken months to conquer in World War I, fell to the Third Army in a few hours. As August ended, 70,000 Germans had passed through Third Army prison cages, and the Patton forces had crossed the Meuse and were fighting at the approaches to the Siegfried Line. Aircraft of XIX TAC frequently attacked targets over the German border. Except for some miscellaneous cleaning up

and some extremely hard frontier fighting, the Battle of France was over and the Battle of Germany had begun.

☆ ☆ ☆

In mid-August General Patton commended XIX TAC's cooperation with the Third Army, for which General Weyland was awarded the Bronze Star. The commendation read:

The superior efficiency and cooperation afforded this army by the forces under your command is the best example of the combined use of air and ground troops I have ever witnessed.

Due to the tireless efforts of your flyers, large numbers of hostile vehicles and troop concentrations ahead of our advancing columns have been harassed or obliterated. The information passed directly to the head of the columns from the air has saved time and lives.

I am voicing the opinion of all the officers and men in this army when I express to you our admiration and appreciation of your magnificent efforts.

Part II

Highlights of Day by Day Air Operations

1 August

ON THIS first day of XIX TAC operations, unfavorable weather kept the fighters grounded until well into the afternoon. Armored-column cover was so arranged as to maintain eight fighter-bombers over each armored division, the eight-plane flights being relieved every hour. Planes and tanks worked closely together, talking to each other by VHF radio.

While General Patton had enjoined XIX TAC not to blow up bridges, it might have been expected that the enemy would do so in order to retard pursuit, but so headlong was the Germans' panicky withdrawal that they had no time to conduct any such demolition. Thus the leading American armor often outran its communications, and the Army's latest information on the location of its forward elements frequently came from reconnaissance or fighter-bomber pilots. To make the most of this source of information, XIX TAC pilots were instructed to include in their reports, whenever possible, the point at which the head of the column was last observed.

In 10 missions of 147 sorties, 22 tons of bombs were dropped. No enemy aircraft were encountered and no losses were sustained.

2 August

Another wing, the 100th, and two more groups, the 405th and 363d, were placed under XIX TAC's operational control. They were most welcome additions, because the command was saddled with the twin commitment of covering armored fingers probing toward the Breton capital of Rennes and toward Brest, and of supplying protection to the Avranches bottleneck.

Although the 363d Group was grounded by weather all day, the others could operate after about 1000, flying 23 combat missions consisting of 223 sorties and dropping 35.75 tons of bombs, representing

a marked increase over the previous day's activity. There were no claims against enemy aircraft, but two planes were lost to flak.

3 August

Weather again was on the enemy's side. The air plan for the day provided cover for the XV Corps' 79th Infantry and 5th Armored Divisions, in addition to protection of bridges and roads in the Avranches-Pontaubault locality and to continued cover for the three armored detachments pushing westward through Brittany. But bases were nonoperational most of the day, with low stratus, nimbostratus, and light showers. Only 6 missions, of 8 aircraft each, were able to take off, of which 4 were unsuccessful because of weather, all bombs being jettisoned or returned to base. The other 2 missions resulted in the destruction or damaging of 40-odd motor and horse-drawn vehicles, including ammunition trucks, in the path of the 4th and 6th Armored Divisions. Total sorties were 48; tons of bombs dropped, 3.25. One aircraft was lost. Twenty-four tactical reconnaissance and two photographic reconnaissance sorties were flown.

This was the date on which, with continued Luftwaffe night attacks against Third Army troops, Ninth Air Force was requested by XIX TAC to supply night fighters.

4 August

Although only four groups were available and low ceilings over bases prevented operations until 1030, the scale of air activity rose sharply to 30 missions consisting of 424 sorties.

Activities of the day included cooperation with the 4th Armored Division, in which 15 enemy tanks were destroyed or damaged; attacks on the strong concrete pillbox defenses of St. Malo in the face of intense flak and fire from warships; and armed, tactical, and photographic reconnaissance flights along the flanks and routes of the advances and as far south as Angers and east as Laval. Some aircraft were damaged by flak, but no planes or pilots were lost and there were no claims against enemy aircraft. The four groups in action dropped 52.5 tons of bombs on the targets.

5 August

On this date the XIX TAC order of battle was raised to five groups when the 36th was placed under General Weyland's control.

Only part of the day was flyable, since the wind blew low stratus clouds from the English Channel onto coastal airdromes at about 1100 and they were not clear until late afternoon. Nevertheless, 246 combat sorties and 10 successful tactical and photographic reconnaissance missions were flown. Forty-four tons of bombs were dropped, results including 58 motor vehicles, a headquarters, nine horse-drawn vehicles, and eight gun positions destroyed, plus damage to a naval vessel in St. Malo harbor.

In the first 5 days of blitz warfare, United States style, the Third Army had conquered most of Brittany, and XIX TAC fighter-bombers had flown 1,088 sorties. In the face of our patrols the Luftwaffe had put up no resistance by daylight. Losses totaled only three aircraft. Claims against ground targets for this period have been given earlier.

6 August

With the fall of Rennes and the acquisition of airfields around that city, XIX TAC fighters were not only much closer to the scene of operactions but also in a locality more favored by weather than the rain-pelted Normandy peninsula.

The picture had changed; the encirclement had begun. In view of this, the main weight of XIX TAC's air power was shifted to the eastern front and the Loire valley, with patrols over the danger area in the Avranches corridor.

Squadrons covering XV Corps' 79th and 90th Infantry and 5th Armored Divisions between Laval and Mayenne found the hunting good, especially in tanks. One P–47 was lost; while strafing tanks it "mushed in" and exploded.

The day's combat sorties totaled 293. There were no enemy aircraft claims, but 35.5 tons of bombs were dropped on varied targets. In addition, 26 successful tactical and photographic reconnaissance missions were flown, and B–26's of IX Bombardment Division attacked the defenses of St. Malo in response to the XIX TAC request of 4 August.

"A successful day," pronounced Third Army's G–3 (Air) Section,

"with attacks on all types of targets, from boats to field guns. Movement east, south, and west by ground troops was greatly facilitated."

7 August

To meet its increased responsibilities, the strength of XIX TAC was again augmented, with nine full groups of fighter-bombers now under its operational control. These were the 36th, 358th, 362d, 371st, 373d, 405th, and 406th, all equipped with P–47's, and the 354th and 363d Groups, flying P–51's. Seven of these groups and both of the wings, the 100th and 303d, had been under the administrative control of the Command for months in the old IX Fighter Command days in England, so the basis for effective teamwork was firmly laid.

This was the day on which word was received of the GAF attack on an American supply column; it became apparent that enemy air power was becoming more aggressive. It was a day of hard fighting; when it was over, XIX TAC claims included destruction of 33 aircraft (14–1–3 in the air, 19–0–4 on the ground) for a loss of 10 planes and pilots. Sorties hit a new high, with a total of 601. Bomb tons on targets amounted to 62. Thirty-two tactical reconnaissance sorties were flown.

Armed reconnaissance missions now were reaching far beyond Paris as well as south of the Loire. Several trains and a power plant were successfully attacked as far east as Troyes and Soissons.

It was moving day, this time from the vicinity of Beauchamps to a point near St. James.

8 August

To begin its second week of activity, XIX TAC struck another high peak by flying 717 sorties. Five enemy aircraft were destroyed and 11 XIX TAC planes were lost. Strafing and dropping 94.5 tons of bombs, the fighter bombers destroyed 29 locomotives, 137 freight cars, 195 motor vehicles, 10 fuel and ammunition vehicles, 16 horse-drawn vehicles, 17 tanks or other armored vehicles, and 11 flak positions; damaged two locomotives, 57 freight cars, 28 motor transports and 26 armored vehicles; cut rail lines at 7 points; and attacked a troop concentration and 7 fuel dumps, 1 of which was completely destroyed. Reconnaissance planes flew 46 tactical, 1 photographic, and 6 artillery adjustment missions.

The outstanding features of the day's operations were the large bag of enemy transport destroyed or damaged and the almost continuous air cover provided our ground forces. Improved communications with the 67th Reconnaissance Group facilitated the flow of information to the Army G–2 section, and in several instances information of enemy motor transport and tank concentrations was received in time to permit A–3 to order a mission.

9 August

This was the busiest day since XIX TAC became operational. There were more missions (72) and more sorties (780) than on any previous day. Nineteen enemy planes were destroyed, claims being 13–2–0 in the air and 6–0–2 on the ground. Nine United States pilots and planes were lost.

All but two of the groups flew three missions. The three squadrons of the 363d Group and the 405th and 406th Squadrons of the 371st Group flew five missions. These squadrons averaged 11 hours and 45 minutes in the air.

A rocket squadron, the 513th of the 406th Group, was now in action, and 16 five-inch rockets were launched against ground targets, in addition to 58.5 tons of general-purpose bombs and numerous rounds of .50-caliber ammunition.

Thirty-seven tactical and photographic reconnaissance sorties aided in keeping an eye on the enemy.

10 August

Operations were somewhat reduced by low stratus clouds moving in from the Channel late in the afternoon. Nevertheless, 659 sorties comprising 54 missions were flown. Forty-six and one-quarter tons of high explosive were dropped on targets and four enemy planes were shot down. XIX TAC lost six aircraft and pilots. Thirty sorties were flown by tactical reconnaissance P–51's, flying chiefly over areas on the outer fringe of operations.

Targets ranged from motor transport, armored vehicles, and similar objectives to the flak-defended bastion of St. Malo, still defying Allied forces to drive them out, still responding to the Fuehrer's express command to hold out to the last man.

One of the six casualties of this day was Col. Morton D. Magoffin, commanding the 362d Group. Hit by flak while on a dive-bombing and strafing mission in cooperation with the XV Corps east of Le Mans, he continued to lead the squadron in its bombing run, hoping that the dive would blow out the fire in his engine. When it failed to do so, he pulled up and bailed out. The sequal to this episode did not come to light until weeks later. Colonel Magoffin fell into enemy hands and was taken to a hospital in Paris with a flak wound in his right thigh. When the enemy evacuated Paris, he hid in a closet and escaped notice. French surgeons performed a badly needed operation, and the colonel was subsequently evacuated by air to England.

11 August

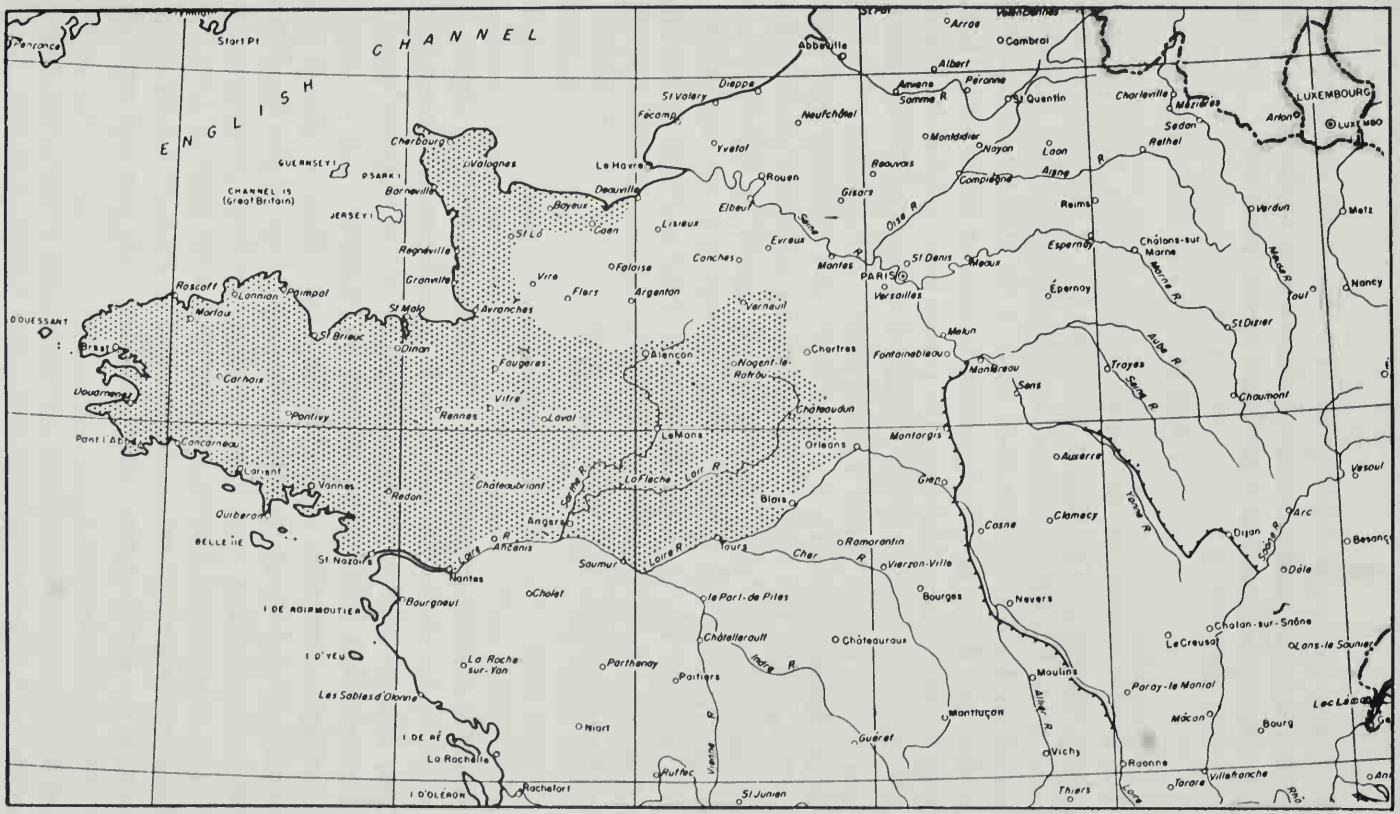
With the big push under way to the north and northeast to encircle German troops in the Mortain-Falaise-Argentan region, groups cooperating with the 5th Armored, 2d French Armored, and 79th and 90th Infantry Divisions were especially busy. Combat sorties totaled 454.

One feature of the day's operations was the successful bombardment of an enemy railroad gun position which was holding up the progress of the 5th Infantry Division near Angers. Forty minutes after the request for air attack on this position was received at Combat Operations, Fighter Control at 303d Wing had vectored the 367th Squadron of the 358th Group to the target, and the position was destroyed by two direct bomb hits and four near misses.

For a loss of 4 planes, XIX TAC claimed a total of 10 locomotives, 243 railroad cars, 15 tank cars, 42 tanks and other armored vehicles, 119 motor vehicles, and 20 horse-drawn vehicles demolished or damaged. Successful attacks were made on 6 marshalling yards, 5 field gun positions, a troop concentration, a headquarters, an ammunition dump, a storage building, and an airfield, and 10 railroad lines were cut. Of 15 reconnaissance sorties flown, 10 were tactical, 3 photographic, and 2 for artillery adjustment.

12 August

Despite the continued efforts of saboteurs, communications through the Avranches gap were sufficiently stable to permit the transfer of



Ground Situation, 15 August 1944

operational control to the forward echelon in the vicinity of St. James on this date.

Forty-one missions, consisting of 481 sorties, were flown, and the day's toll in enemy transport and communications was gratifying. No planes were lost and there were no claims of enemy aircraft.

13 August

The deadly squeeze on entrapped German forces was nearing a complete strangle. The biggest transport kill of the entire month, the 400 to 500 burned or blown-up enemy vehicles referred to earlier, occurred on this date. When P–51 pilots of the 363d Group reported that they had flown to the edge of Paris without encountering flak, the fall of the capital, which occurred a week later, was foreshadowed.

All of the day's bag in aerial combat fell to the 363d Group which scored 12–2–1 for the loss of a single plane. Flying assault cover, 8 of these Mustangs scored 4–1–1 for 1 in an early morning fight with 12 ME–109's and FW–190's. On an evening mission, 8 pilots of the same squadron, the 382d, sighted approximately 25 ME–109's and FW–190's strafing our troops. They destroyed 8, an average of 1 each. Another was probably destroyed and the rest were driven off.

Combat sorties amounted to 718 and reconnaissance sorties to 38. Ten planes were lost, only one to enemy aircraft.

14 August

With his airfields around Paris endangered and many in process of evacuation, the enemy appears to have flown fewer than 100 single-engine fighter sorties on this date, chiefly in defense of ground troops.

The only XIX TAC group to meet air opposition was the 405th, giving close cooperation to the 7th Armored Division. Five P–47's and pilots were lost against claims of 4–2–1. Four of the five losses were incurred when four P–47's, pulling up from reconnaissance about 20 miles east of Dreux, were bounced from above at 3,000 feet by 16 FW–190's which came in below the four P–47's flying top cover. Three of the attackers were claimed as destroyed, plus one probable and one damaged.

Seventy-nine combat missions, including 665 sorties, were flown, together with 18 reconnaissance missions involving 36 sorties.

15 August

With enemy fighter activity rising sharply to a total of about 350 sorties, XIX TAC claims were 13–0–3 in the air and 2–0–7 on the ground. Five U. S. planes were lost. North of Dreux, the 406th Group's Tigertaming 513th Squadron got 4 heavy tanks and 1 light one with its 5-inch rocket projectiles.

Total combat sorties were 659, and 40 tactical reconnaissance and artillery adjustment sorties were flown.

An advance element of XIX TAC had leapfrogged forward to a wooded section north of Laval.

16 August

After several days of intensive operations, activity was curtailed by low stratus clouds which covered airfields in the Cherbourg peninsula from approximately 1000 to 1500. Many pilots returning from early morning missions were unable to land at their own bases.

The weather definitely favored the enemy; while our bases were "socked in," his were clear. Hourly attacks by three strafing Me–109's were reported by Combat Command "A" of the 4th Armored Division at Orléans. These strafers successfully eluded our fighters, but a probable attack on our ground forces southwest of Paris was apparently prevented at 1545 when 70-plus FW–190's, many carrying bombs, were engaged by eight P–51's of the 354th Group over Rambouillet Forest, 10 miles west of the capital. Two German planes were shot down and two P–51's were lost, but the enemy forces were dispersed toward the south.

Half an hour later, another patrol of 8 P–51's sighted 20-plus ME–109's south of Dreux at 11,000 feet. Orbiting in elements of 2, the squadron climbed to 14,000 feet and attacked from above. At the same instant, 60 or more ME–109's joined the combat, emerging from cloud cover to the north. In the next 15 minutes the 8 Mustangs, outnumbered 10 to 1, were busily embattled from 11,000 feet to the deck. The enemy was aggressive and apparently experienced, but he tried to turn with our aircraft. When it was all over, our pilots had destroyed 11 and damaged 2 against losses of 2 planes.

Because of the weather, only 280 combat sorties and 36 reconnaissance sorties were flown. Thirteen enemy planes were destroyed and

4 damaged. Five of ours were lost. Five tanks, 25 motor vehicles, and 55 railroad cars were demolished or damaged, 2 airfields and 2 gun positions attacked, and 3 railroad lines cut.

17 August

Air opposition to XIX TAC fighters was virtually nil, despite clear weather over enemy bases and clouds over ours.

St. Malo's garrison surrendered, yielding a total of 11,600 prisoners from the time the siege began.

The Third Army reported Châteaudun clear of the enemy, and immediate steps were taken to make this good airfield available to our groups, already laboring under heavy handicaps of range. Because of the speed of the American advance, the Germans had not had the opportunity to carry out such extensive demolitions as at other fields.

On this day 331 combat and 56 reconnaissance sorties were flown. Two enemy planes were destroyed in combat, with no losses.

18 August

Harvest time had come to the Argentan-Trun pocket, with Allied aircraft enjoying one of their biggest days of the war. The lion's share of the spoils, however, went to RAF aircraft, since the concentration of enemy vehicles was in British-assigned territory. Although denied a chance at the jackpot, XIX TAC groups accounted for 17 tanks, 206 motor transport, 30 horse-drawn vehicles, 7 locomotives, and 218 railroad cars. Two troop concentrations, 1 motor transport park, 5 gun positions, and 3 marshalling yards were attacked. Combat sorties totaled 679; claims were 5–0–2 (air) and losses were 7.

19 August

A cold front, moving across our bases and target areas from west to east, sharply curtailed air operations. Several successful missions were flown in the morning, but the front closed down our bases in the afternoon, then moved into the target areas. Results included destruction of 20 Seine River barges and damage to 91 more; other ground targets smashed or damaged were 18 motor vehicles, an armored vehicle, 2 locomotives, 9 railroad cars, and 2 power launches. Two gun positions were attacked and a rail line cut. There were 212 combat and 34 reconnaissance sorties.

Sharp aerial combat occurred, with 9 enemy aircraft destroyed (8 in the air) against loss of 5 planes and pilots.

While strafing FW–190's on the ground near Pontoise, the 406th Group's 513th Squadron was bounced by a number of enemy fighters. When the 512th Squadron tried to help, it in turn was attacked by 30 to 40 aircraft at 8,000 feet. The enemy kept some of his aircraft above the overcast, sending them down in twos and fours to take part in the fight. Final claims were 5–0–3 in the air and 1 on the ground for loss of 5.

20 August

Shortly before dark, 406th Group pilots reported the main highway from Paris to Sézanne loaded with dispersed enemy motor vehicles headed east. Marshalling yards at Joigny and Sézanne were likewise loaded. Obviously the Germans were pulling out of Paris.

Rain and low ceilings limited combat sorties to 388 and reconnaissance sorties to 36. Claims in aerial combat were 6–0–1 and losses were 3.

Eight P–47's were bounced by 12 Me–109's and 20 FW 190's at 3,000 feet about 12 miles southwest of Paris at 1545. Despite the odds of 4 to 1, the Thunderbolts destroyed 6 and damaged 1 for a loss of 2 planes. A third P–47 was lost on a later mission.

21 August

All XIX TAC combat aircraft were grounded throughout the day by the worst weather of the month. A warm wave in conjunction with a cold front caused low ceilings and rain over the entire northern portion of France, restricting air operations to a single uneventful reconnaissance sortie flown along the Loire in the Angers area.

22 August

Increasing vulnerability of the GAF, driven from some of its best fields to landing grounds north and northeast of Paris, was demonstrated when XIX TAC fighters destroyed 20 enemy fighters for the loss of 1. Complete claims were 16–3–1 in the air and 4–0–4 on the ground. Feature of the day was provided by the P–51's of the 354th Group. Fifteen of them, on a fighter sweep, destroyed 12 ME–109's without loss—8 in the air as they were taking off from a grass field 5 miles east of Epernay, and 4 on the ground by strafing.

Flying 333 combat sorties, our aircraft dropped 16.75 tons of GP bombs and 26 fragmentation clusters, plus 18 leaflet bombs. Reconnaissance sorties totaled 60.

23 August

With the enemy endeavoring to give increased air cooperation to his hard-pressed ground forces, especially along the Seine west of Paris, the Third Army reported that the 79th Infantry Division bridgehead in the Mantes-Gassicourt sector was attacked by rocket planes intermittently during the day. Although our air cover in the area was tripled, no rocket-firing planes were seen.

Flying armed reconnaissance ahead of our columns thrusting east past Sens and Troyes, P–47's had just dropped eight 500-pound bombs on a gun position east of Joigny when Combat Command "A" of the 4th Armored Division reported it was being strafed 12 miles northeast of Sens. The remaining bombs were jettisoned, and the Thunderbolts, from 9,000 feet, bounced five ME–109's at 6,500 feet, shooting down two and probably another for no loss. In all, 463 combat and 70 reconnaissance sorties were flown, in spite of poor visibility, cloud, and showers over bases and targets during a part of the day. Claims against enemy aircraft totaled 5–4–7 for loss of two, one of which was to flak.

Word was received that Paris had fallen. Another phase had come to an end.

24 August

Foul weather continued to plague XIX TAC pilots, low ceilings and poor visibility over the target areas in the vicinity of Paris restricting combat activity to 12 missions of 164 sorties. The enemy also was handicapped; no German planes were seen.

Rocket-firing P–47's launched 12 projectiles at 105-millimeter guns near Nantes and claimed 4 destroyed and 2 damaged. Five 88-millimeter guns also were attacked. Forty carts of an ammunition convoy were blown up, and other aircraft did a little "working on the railroad." No high explosive bombs were carried, but rockets and strafing destroyed or damaged 55 railroad cars, 2 locomotives, 68 motor vehicles, 3 tanks and armored vehicles, and 40 ammunition cars; 12

field-gun positions were attacked and 2 headquarters left burning. Twenty-nine reconnaissance sorties were flown.

25 August

As was set forth in the preceding narrative section, this was a fateful day for the Luftwaffe, with both the Ninth and the Eighth Air Forces knocking German aircraft out of the sky. XIX TAC's share of the kill was 36–1–8 in the air and 18–4–0 on the ground, or 54–5–8 all told, against a loss of 8 planes and 7 pilots.

There were renewed evidences that the Luftwaffe was finding its bases in the Paris area too hot to hold, as demonstrated by the GAF fighters seen streaking eastward with belly tanks. The Germans were destroying facilities as fast as they could, in the face of the steady advance of armored forces.

Flying 632 combat sorties, XIX TAC claimed the following results against ground targets, in addition to the haul in the air: 266 motor vehicles, 4 tanks, 44 locomotives, and 164 cars destroyed or damaged; 5 marshalling yards attacked and 5 lines cut; 3 field-gun positions, 4 troop concentrations, an ammunition dump, and 8 military buildings destroyed; 5 airfields attacked and 2 hangars wrecked. In anti-shipping operations off Brest, 2 naval vessels were claimed as destroyed, and 3 naval and 9 merchant vessels damaged. Four P–51's flew artillery-adjustment sorties for corps artillery at Brest, noting many hits on enemy gun positions and shipping. Reconnaissance sorties totaled 64.

26 August

After his heavy air losses of the previous day, the enemy avoided combat with our fighters, and the day's cash register rang up only 2 enemy aircraft destroyed and 1 damaged, all 3 on the ground.

Our groups on armed reconnaissance, patrols, and armored-column cooperation flew 528 sorties. Four planes were lost.

Indications were seen that if the enemy could muster sufficient numbers, he might bring jet-propelled fighters into action against XIX TAC soon. A probable Me–262 twin-jet-propelled fighter was sighted on 25 August, and on the 26th contrails at 20,000 feet, traveling at an estimated speed of 500 miles per hour, were reported.

27 August

With American forces now across the Marne at two points near Meaux and advancing rapidly, German fighter bases along that historic river quickly became untenable and the remnants of the Luftwaffe in eastern France were forced to pull out.

Enemy fighters were again conspicuously absent. The only aerial combat claims were by two tactical reconnaissance P–51's, which were bounced by 12 ME–109's. One ME–109 was destroyed, one probably destroyed. Three of the Command's total losses of 8 planes for the day were suffered by the 10th Reconnaissance Group. One was shot down by small-arms fire while directing artillery at Brest, and 2 others failed to return from a mission in the Dijon region.

Cooperating with ground forces at Brest, XIX TAC fighter-bombers scored at least 9 direct bomb hits on 2 gun positions, put several Napalm bombs in a target area marked by smoke, and damaged 3 merchant vessels. Considerable execution against enemy troops and transport was wrought, and railroad tracks were cut at 5 places.

In all, 650 fighter-bomber and 63 reconnaissance sorties were flown.

28 August

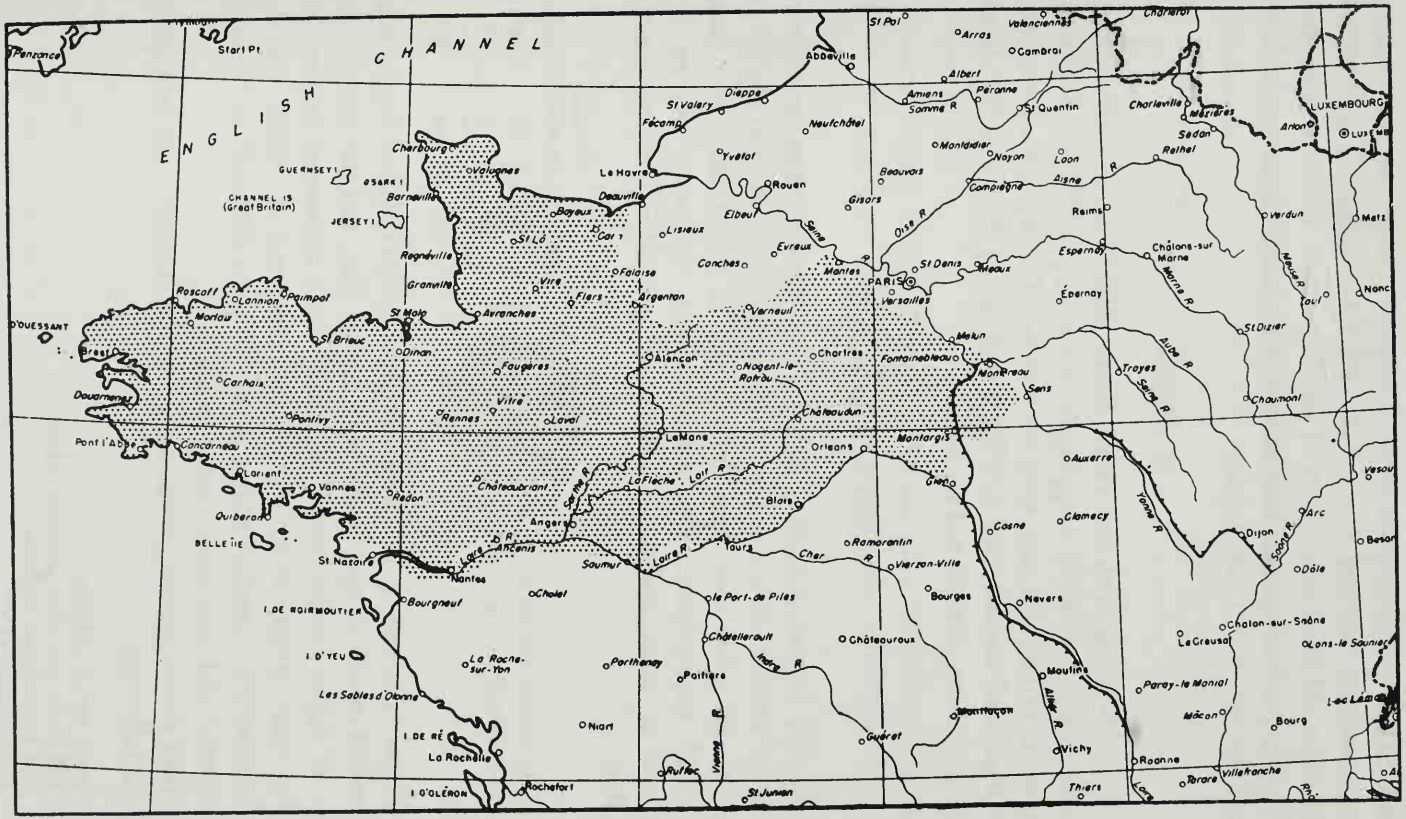
Low cloud during much of the day held operations to 196 combat and 88 reconnaissance missions. During brief periods of flyable weather, telling attacks were made on enemy units trying to escape northeastward into Germany from the Dijon-Besançon locality. In the course of these operations, 11 enemy aircraft were destroyed by bombing and strafing an airfield near Neufchâteau. Claims for the day were 3–0–0 in the air and 11–0–0 on the ground, with 3 losses.

29 August

Weather—completely unflyable. Only one combat mission was undertaken and no targets were attacked, the pilots being forced to return to base 30 minutes after take-off.

30 August

A cold front was sweeping over western Europe, and the resultant low ceilings and rain continued to blot out our bases and target areas.



Ground Situation, 22 August 1944

All XIX TAC operations were "scrubbed" except for two weather reconnaissance sorties. Control of XIX TAC operations now shifted far eastward from the vicinity of Lavel to a new advanced headquarters site in the Forêt de Marchenoir, between Orléans on the Loire and the airfield at Châteaudun.

31 August

In cooperating with the Third Army, XIX TAC flew 18 missions consisting of 313 sorties, dropping 60.75 tons of general-purpose bombs, 39 tanks of Napalm, and 16 leaflet bombs. Twenty rockets were discharged and considerable strafing was done. There were no claims against enemy aircraft and no losses.

Recapitulation

During August, aircraft of XIX TAC flew a total of 12,292 fighter-bomber sorties. In all, 114 aircraft were lost, but many of the pilots bailed out safely over friendly territory, or found their way back through enemy lines. Our pilots claimed 163 enemy aircraft destroyed in aerial combat and 66 on the ground. Complete claims follow:

	Destroyed	*Probably Destroyed*	*Damaged*
Enemy aircraft (in aerial combat)	163	16	34
Enemy aircraft (on ground)	66	4	28
	229	20	62

Figures give only a partial picture of the results obtained during this crowded month of operations, since smoke, dust, and the fleeting nature of fighter-bomber attack frequently make assessment impossible. After many attacks which pilots simply dismissed as "NRO" (no results observed), ground troops reported "guns silenced" or "results excellent," and were seen to move forward.

Pilots' claims against ground targets include destruction or damaging of the following:

4,058 motor vehicles
466 tanks and other armored vehicles
598 horse-drawn vehicles
246 locomotives

2,956 railroad cars
155 barges and other river craft
18 merchant vessels
8 naval vessels

Stationary targets attacked by bombing or strafing, or both, include the following:

22 gun positions
39 marshalling yards
11 ammunition dumps
13 fuel and supply dumps
3 radar installations
17 airfields
7 headquarters
44 troop concentrations and bivouac areas
58 barracks and other enemy buildings
122 rail lines

Reconnaissance aircraft flew a total of 599 missions during August, of which 522 were successful. Missions flown consisted of the following:

Tactical reconnaissance	329
Photo reconnaissance (day)	258
Photo reconnaissance (night)	12
Total	599

Part III

Notes on Organization, Tactics, and Technique

THE FOREGOING pages have given an account of the exploits of the XIX TAC–Third Army air-ground team, which wrote an entirely new page in the history of warfare. Behind this impressive success lies a story of preparation and planning, of experimentation, of intelligent improvisation. Some aspects of these often unsung activities are considered below.

General.—The operations of XIX TAC in the field proved the basic concepts of FM 100–20 to be fundamentally sound.

The order of priority of tactical missions was:

1. Attainment and maintenance of air superiority
2. Isolation of the battlefield
3. Close air cooperation with ground units in combat

Air liaison officers.—Air liaison officers were used by XIX TAC and proved of extremely great value. However, it became apparent in the early stages of rapid advance of Army divisions that one air cooperation party per armored division was inadequate. The armored divisions of the Third Army habitually advanced in two or three columns, each making up a combat command. Because of their physical separation and rapid movement, it was found necessary to provide an air cooperation party for each combat command. A sufficient number of air cooperation parties, complete with equipment and operating personnel, to work with each advancing column is an arrangement which serves best to achieve the desired results. In the campaign here discussed such parties were improvised.

Communications.—Wire communications for the Command, and control among the various elements of XIX TAC, proved unsatisfactory under conditions of rapid advance. This resulted from long lines of communication; cutting of lines by saboteurs; shortage of wire; shortage of repeater and carrier equipment; shortage of maintenance, construction, and operating personnel. These were formidable

obstacles which make all the more admirable the ability of XIX TAC to maintain even sketchy communications throughout a kaleidoscopic campaign.

Tactical air control.—The assignment and operation of a fighter control center with fighter wings proved unsatisfactory for offensive tactical air control purposes. To overcome this, all aircraft warning units, fighter control squadrons, and radio intercept service were organized into a provisional tactical control group and placed directly under the control of Advanced Headquarters XIX TAC. Elements of the tactical control group were maintained very close behind the advanced ground troops and close to, but not necessarily with, the Advanced Tactical Air Command headquarters.

Supply and transportation.—An adequate air service command and aviation engineer command are absolutely essential to the mobile tactical air force and have proved their worth in the European theater. Because of the pooling of motor transportation in the communications zone, the air service command has not always been able adequately to supply or move the tactical units. General Weyland held the belief that the air service command in the theater should have sufficient motor transport to move and supply the tactical units over distances up to 300 miles, and that the service team should be an organic part of the combat group in a mobile tactical air command.

Airdrome squadrons.—Airdrome squadrons proved invaluable in maintaining tactical operations by refueling and rearming units at advanced landing grounds. They also proved their worth in temporarily servicing tactical groups at new airdromes while the groups' personnel was being leapfrogged forward.

P–47 aircraft and API ammunition.—The P–47 airplane has been extensively used with very great success in strafing locomotives, trains, motor transport, horse-drawn transport, and armored vehicles. Armor-piercing, incendiary ammunition was shown to be far more effective on these strafing operations than the mixed loading of two armor-piercing, two incendiary, and one tracer. Likewise, it has been found much more effective in use against hostile aircraft in the air and on the ground.

Rockets.—XIX TAC thoroughly tested the trackless, high-velocity, 5-inch rocket under combat conditions. It was accurate and especially effective against tanks, armored vehicles, locomotives, and gun posi-

tions. It was found to add little to the plane in weight and to detract little in speed and, considering its flexibility, it was regarded by XIX TAC as an extremely valuable tactical weapon.

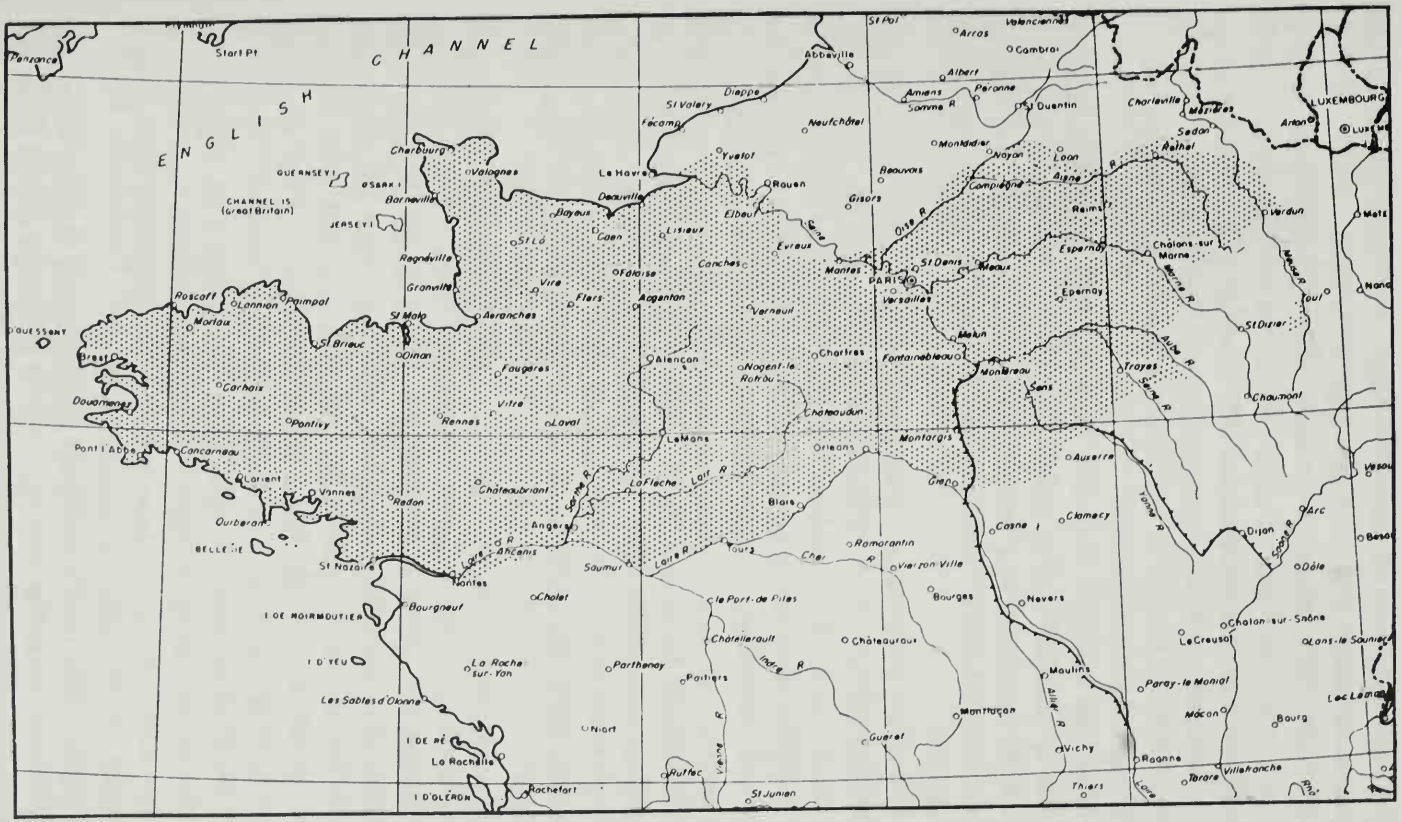
Armored-column cover.—The practice of assigning to one fighter-bomber group the task of providing continuous cover for one armored column during daylight hours proved most satisfactory. Groups were directed to furnish 8 to 12 aircraft for cover to armored columns. As each flight approached, the leader checked in by radio with the flight leader being released, also with the air-cooperation-party radio on the ground. Suitable targets left to be attacked were passed to the flight picking up the patrol. Standing operating procedure was for flights to patrol ahead to a distance of 35 miles, seeking out possible strongpoints or pockets of resistance which might hamper the forward movement of our armor. Such targets were attacked and were also reported to the armored column.

The German camouflage discipline was excellent. After 15 or 20 missions, however, pilots could pick out irregularities of shadow along roads, which disclosed the presence of the enemy.

Both the number of planes, 8 or 12, and their bomb loads varied with the amount of enemy armor opposing the movement of our column and with the likelihood of encountering enemy aircraft. For example, in the area between Le Mans and Fontainebleau, where few thick-skinned enemy vehicles were met, it was possible almost to dispense with carrying bombs, since the desired results could be obtained by strafing. In the Mantes-Gassicourt region, close to Paris and the enemy's fighter fields, only one-third of our aircraft were bombed up, because of the frequency of brushes with enemy planes.

It was conclusively proved that our .50-caliber API ammunition could destroy enemy armor, and did so. Pilots repeatedly reported tanks being set afire by low-altitude strafing from the rear. Evidently ricochet bullets found their way into the engine section through exhaust and cooling vents.

Air-ground communications.—At the outset of the campaign, "C" Channel was used for all communication between aircraft and ground forces. However, this channel proved to be badly overcrowded, and early communication difficulties were overcome by assigning frequencies as follows: Button A—group frequency and homing; Button B—air-ground communication with VIII and XII Corps; Button C—



Ground Situation, 1 September 1944

communication with all aircraft of Ninth Air Force; Button D—air-ground communication with XV and XX Corps.

Altitude of operations.—Operations under 3,500 feet were found to be impractical for fighter-bombers because of the damage inflicted by the intense light flak encountered over concentrations of enemy troops. The P–51 was much more susceptible to serious damage by light flak than the P–47, because of the former's liquid-cooled engine and its somewhat lighter construction.

Minimum weather.—For dive bombing, XIX TAC operations required a 5,000-foot ceiling with broken cloud. For armed reconnaissance the minimum was 3,500 feet with broken cloud. For take-off from base, minimum conditions were 1,000-foot ceiling and 3-mile visibility.

Frequency of operation.—Two group missions, or six squadron missions, per day per group proved to be the most desirable average scale of effort. XIX TAC squadrons had been reduced in number from 16 to 12 planes, since this gave increased flexibility and was adequate for any task encountered. Two group sorties daily thus meant 72 individual aircraft sorties, and it was found that this scale of effort could be maintained day in and day out without affecting maintenance. As a general policy, each group was allowed one day off for maintenance every 7 to 10 days. Also, two missions with 12-plane squadrons were the maximum that could be supported with the flow of replacement aircraft.

Bomb-loading.—The most frequent loading consisted of 500-pound general-purpose bombs with instantaneous fuze. This bomb was found suitable against most military installations not protected by reinforced concrete or heavy masonry. The 500-pound general-purpose bomb was also used satisfactorily, with 8- to 11-second delay fuze, for cutting railway lines, the bomb being driven into the side of an embankment by minimum-altitude skip-bombing methods. With a 6- to 12-hour delay fuze, the same bomb was dropped on highways to discourage movement at night. When the Germans were trying to escape across the Seine, these bombs, with long-delay fuzing, were dropped into the water close to the ferry slips.

Fragmentation bombs were used less extensively than the 500-pound GP because this swift, "end run" type of campaign offered fewer opportunities for their effective employment. The Argentan pocket was

an outstanding exception; fragmentation bombs were used there with excellent results. Fragmentation clusters and, to a smaller extent, the 260-pound antipersonnel fragmentation bomb, were employed against personnel and thin-skinned vehicles.

Napalm was found to be a very good weapon if properly employed on suitable targets. It has two important advantages among others; it can be dropped from a low altitude without danger to the aircraft, and it completely smothers the target with intense flames, burning everything combustible and destroying personnel by anoxia, carbon monoxide poisoning, and burning. It is particularly adapted to attack on deep shelters, because of its effect upon the ventilating system. In attacks on gun positions the effectiveness of artillery pieces was impaired or destroyed by Napalm's intense heat. For Napalm, the regular belly tank (usually the 150-gallon type) was used, with a detonator but no fins. Dropping was done from minimum altitude by visual methods, without use of a sight.

Virtually no 1,000-pound bombs were used during the mobile warfare of August, two 500-pound bombs proving more effective for most purposes.

Radius of action. Effective radius for the P–47 with full bomb load but without spare tank was 200 miles; the 150-gallon tank increased this to 350 miles. For the P–51 the radius was 325 miles on fighter sweeps without tanks, or about 600 miles with 150-gallon tank, although so much range was rarely needed in tactical operations of the type conducted by XIX TAC.

Airfield surface.—A minimum of 5,000 feet proved necessary for taking off with full tank and two 500-pound bombs, since most XIX TAC fields had a dip or roll and acceleration was not so rapid as on a hard-surfaced runway. Hessian waterproof material was very satisfactory when laid on a graded surface. Considerably better than such landing grounds, however, were established airfields captured from the Germans and repaired, such as those at Rennes, Châteaudun, and St. Dizier. Such fields had extensive dispersal areas and were large enough to accommodate two groups.

Flank protection.—The swift pace of General Patton's advance posed many new problems, one of the most demanding of which was protection of the long flank along the Loire. The task of watching that flank and preventing any dangerous concentration was turned

over entirely to the air, an important decision which, as has been noted, marked a forward stride in the history of warfare. This task was successfully carried out by vigilant tactical and photographic reconnaissance backed by fighter bombers, which were continually attacking enemy troops and transport, interdicting movements by road and rail, and keeping the enemy constantly off balance so that small units had little chance to "snowball" into effective opposition. The full results of these efforts were not apparent until the middle of September, when the German general commanding 20,000 troops south of the Loire surrendered, with all his officers and men, to the U. S. Ninth Army and to the Commanding General, XIX TAC. His capitulation resulted from three factors: relentless air attack, effective action by the French Forces of the Interior, and the cutting of the only remaining escape route by the junction of the U. S. Third and Seventh Armies.

Operations on fronts 350 miles apart.—When Brest still held out, and the Third Army's main attack meanwhile moved well to the east of Paris, XIX TAC found itself operating simultaneously on fronts 350 miles apart. This proved entirely practical because of the flexibility and range of air power.

Situation map.—So rapid was the advance and so wide the extent of the front that it was found impracticable to continue maintaining the general situation on a map of 1: 100,000 scale. General Patton's spearheads were constantly running off the map, even though it was maintained on boards aggregating 16 feet long and 8 feet high. Accordingly, the 1: 250,000 map was substituted and served satisfactorily.

Reconnaissance and intelligence.—Reconnaissance, intelligence technique, and teamwork between the A–3 and A–2 sections improved materially in the course of the month, an improvement reflected in the results achieved in hunting down the enemy's air force and catching his aircraft on the ground, in attacking enemy transport attempting to escape into Germany from south of the Loire, and in providing direct cooperation with the ground forces.

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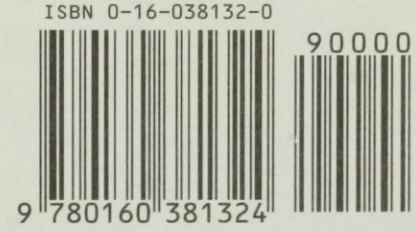

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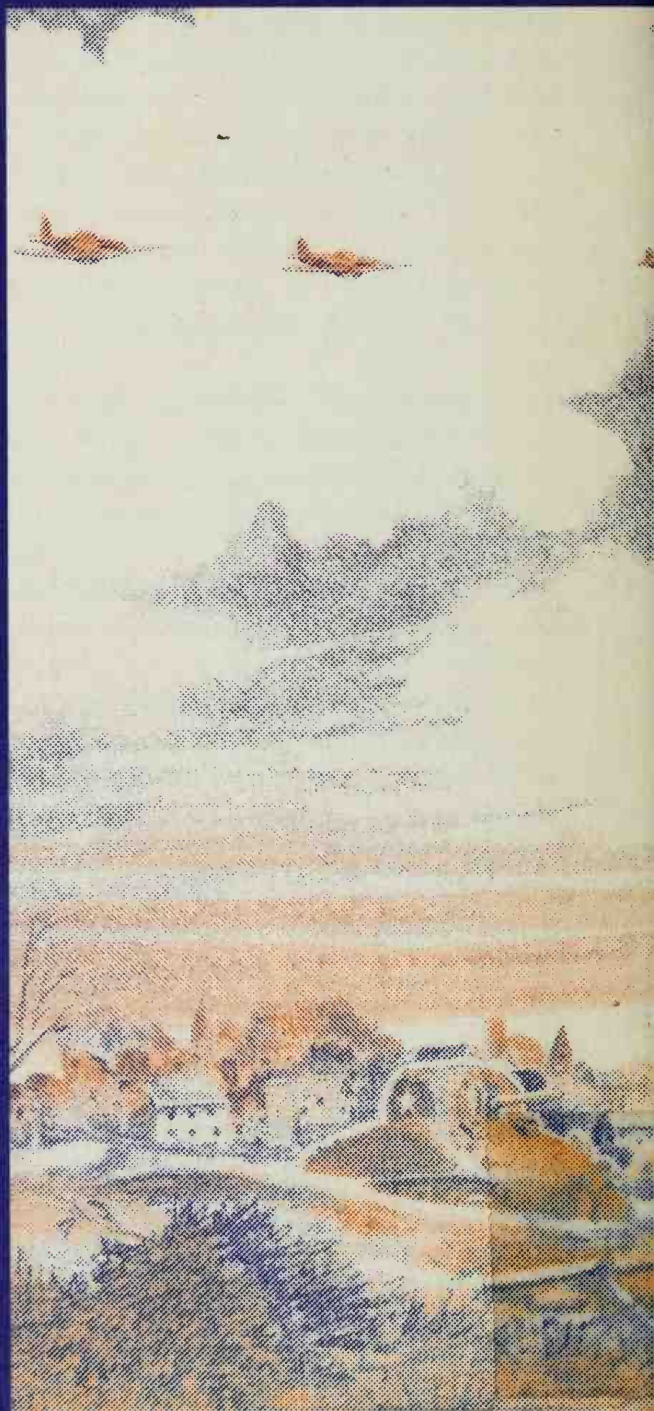

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